Safeguarding Rural Communities** and their physical assets from climate induced disasters in **Timor-Leste

Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste

ESIA and ESMP for Water Supply Projects

Revised and updated: June 2023
Project Management Unit (PMU), GCF SCR Project

Notice

Public Consultation/Disclosure Notice[1]

Date: **XXXX**

The United Nations Development Programme (UNDP) is requesting feedback on the attached draft Environmental and Social Impact Assessment and associated Management Plan for this project.

Comments and questions can be sent to the following address:

United Nations Development Programme

Physical Address: UNDP Timor-Leste, UM House, Caicoli Street P.O Box No.008, Dili

Tel: +670 3311220., Ext 2000 or 2069

Fax: N/A

Email: registry.tp@undp.org

Website: www.tl.UNDP.org

The last date for receiving of comments is XXXX

This document and its contents have been prepared and are intended for UNDP's and GCF's information and use in relation to the project Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste. The report was prepared by the Project Management Unit and reviewed by the Accredited Entity in line with the Environmental and Social Management Framework for the "FP109 Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste" project approved by the GCF.

The six-year US$ 60.04 million project is supported through the United Nations Development Programme (UNDP), comprising US$ 22.9 Million GCF funds, complemented by co-financing of USD $37.087 million from 5 main sources.

This document has **260** pages including the cover.

Document history

Assignment: **Project Activity:**			**Document Title:**			
Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev D01	First Draft for NCE review	M. Ayoung and Jehangir Khan (20-03-23)				
Rev D02	Second Draft for NCE review	Jehangir Khan (10-04-23)				
Rev F1.0	Third Draft incorporating GCF IS, RR and IPP comments	M. Ayoung (01-06-23)				

[1] In line with standard practice and requirement for UNDP projects that seek support from the Global Climate Fund (GCF), UNDP discloses the ESMP for Moderate Risk projects at least 30 days before GCF Board consideration on the relevant UNDP country website in both English and the local language(s). UNDP has completed the GCF "Environmental and Social report(s) disclosure" template with the relevant weblinks to the posted documents and submits the template together with the GCF proposal.

Infrastructure Project Type:
Water Supply Projects

Project Proponent:
Ministry of State Administration (MSA)

National Stakeholders/Institution
Secretary of State for the Environment (SSE)
National Environmental Licensing Agency (ANLA)

ESIA Study/ ESMP Preparation
Jehangir Khan, Project Manager GCF
Dr. Margaretta Ayoung, International Social and Environmental Specialist
Subarna KC, Team Leader Infrastructure
Juliana Carvalho Rangel, National Engineer
Nelson Pereira Vicente, National Engineer
Nelia Dos Reis Magno, National Engineer
Petronilo P. Muñez Jr., GIS Specialist, Mapping and Catchment Analysis
Crissantos da Conceicao, Climate Change and Environment Officer
Maria Ximenes Pinto, Climate Change and Environment Officer
Angelo Martins, Field Coordinator and Community Engagement
Leonel Bere, Field Coordinator and Community Engagement
Jose Antonio Pinto, Field Coordinator and Community Engagement
Mario Benevides, Field Coordinator and Community Engagement
Domingos De Jesus Sarmento, Field Coordinator and Community Engagement
Jose Nunes, Field Coordinator and Community Engagement

Review/Clearance by Accredited Entity:
UNDP Timor-Leste Country Office, Domingos Lequi Siga Maria
UNDP BRH, RTA & UNDP HQ

Table of Contents

ACRONYMS & ABBREVIATIONS

Abbreviation	Meaning
AE	Accredited Entity
ANLA	National Environmental Licensing Agency (Agência Nacional de Licenciamento Ambiental)
BOQ	Bill of Quantity
CCAP	Climate Change Adaptation Planning
CFP	Chance Find Procedure
CRIM	Climate Resilient Infrastructure Methods
DRBFC	Directorate for Roads, Bridges and Flood Control Ministry of Public Works
EIA	Environmental Impact Assessment
ELL	Environmental Licensing Law
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FAA	Funded Activity Agreement
FP	Funding Proposal
FPIC	Free Prior and Informed Consent
GAP	Gender Action Plan
GBV	Gender Based Violence
GCF	Green Climate Fund
GCF-SRC	Green Climate Fund - Safeguarding Rural Communities Project
GoTL	Government of Timor-Leste
GRM	Grievance Redress Mechanism
IP	Implementing Partner
IPP	Indigenous Peoples Plan
MAF	Ministry of Agriculture and Fisheries
MS	Method Statement
MoPW	Ministry of Public Works
MSA	Ministry of State Administration
NIM	National Implementation Modality
OHSMP	Occupational Health and Safety Management Plan
PD	Project Document
PDIM	Programa Dezenvolvimentu Integradu Municipal (Integrated Municipality Development Program)
PMU	Project Management Unit

PNDS	Programa Nasional Dezenvolvimentu Suku (National Village Development Program)
SEA	Secretary of State for the Environment
SEP	Stakeholders Engagement Plan
SES	Social and Environmental Safeguards
SESP	Social and Environmental Screening Procedure
SSCP	Secretary of State for Civil Protection
UNDP	United Nations Development Programme

DEFINITIONS OF NATIVE TERMS

Administrative Post:	sub-district within the municipality
aldeias:	sub-village
lia nain:	keepers of the customary knowledge or traditional cultural leaders in sucos/villages in Timor-Leste
lulik:	refers to the non-human realm containing the divine creator and the spirits of the ancestors
suco:	village
tara bandu:	traditional and sacred regulations that dictate relationships between people, people and nature, and people and non-human dimensions
uma kbi'it laek:	building constructed for people in vulnerable households

LIST OF NOMENCLATURE

%	:	Percentage
°C	:	Degree Celsius
mm	:	Millimeter
Ch	:	Chainage
cm	:	Centimeter
m	:	Meter
Km	:	Kilometer
US$	:	United States Dollar
m^2	:	Square Meter
m^3	:	Cubic Meter
No.	:	Number

1 Executive Summary

1.1 Introduction

The ESIA and ESMP for Water Supply comprise of seven chapters (including the Executive summary) as summarized in the following sections. In addition, 7 Annexes provide the complementary information. The ESIA and ESMP for irrigation schemes is presented as a complete and standalone document for ease of disclosure and consultation. However, the following chapters which are 'common' to the ESIA and ESMP for Rural Roads and Irrigation Systems can be skipped if the reader has already reviewed the ESIA and ESMP for rural roads and Irrigation Systems. Chapter 2 (Introduction) and Chapter 3 (Policy, Legislation and Institutional Framework) are similar to Rural Roads and Irrigation Systems ESIA and ESMP ad Chapter 5 (Baseline conditions) is absolutely similar to Rural Roads and Irrigation Systems ESIA and ESMP. All other chapters contain consideration of the water supply schemes. In terms of Annexes, Annexes 1 and 2 are 'unique' while the others are common or similar enough to be skipped.

The Environmental and Social Impact Assessment (ESIA) and Environment and Social Management Plan (ESMP) were prepared for water supply schemes (sub-projects) under the GCF Project FP109 Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste (GCF SRC project). The GCF SRC project is rated moderate as per UNDP SES Standards and, as such, an ESMF was developed to support the Funding Proposal (FP), which was approved by the GCF Board in July 2019, and to further guide the project's implementation. The GCF SRC project includes 130 construction works, divided into 4 types: flood protection, rural road construction/rehabilitation, irrigation systems, and water supply infrastructures, under Activity 2.2.4. Hence ESIA/ESMPs are developed to cover each of the 4 types of infrastructure.

The present ESIA/ESMP covers the 38 individual water supply schemes (sub-projects) (20 GCF funded and 18 Co-financed by the Government). The list below provides the tentative implementation timelines for the 20 GCF funded sub-projects. For the co-financed sub-projects the planning is done on a yearly basis and at this stage the implementation timelines for the duration of the SRC project are not available. Please See Annex 1 for full list and scope including the beneficiaries of 38 sub-project works.

Project Code	Project Name	Municipality	Tentative Implementation Year	ANLA Licence Status
A-WS-01	Construction of gravity-fed water supply system in suku Liurai of Remexio	Aileu	Implemented by the government in 2021. Replacement will be identified in 2023 and will be implemented in 2024	No
A-WS-02	Construction and installation of 2 km gravity-fed water supply system from Tataloko - Erluli in Fahisoi Lequidoe	Aileu	Planned for Implementation in 2024	No
B-WS-02	Water Supply system to suco Laisorulai	Baucau	Planned for Implementation 2025	No
B-WS-03	Water Supply system to aldeia uaimanaboe and uatobala, suco uailili	Baucau	implemented by Government in 2018. Replacement will be identified in 2024 and implemented in 2025	No
B-WS-04	Water Supply system to aldeia uailacama, suco vemase tasi	Baucau	Implemented by the government in 2021. Replacement will be identified in 2024 and will be implemented in 2025	No
E-WS-01	Construction of water supply system in suku Estado	Ermera	Planned for Implementation 2023	Granted
E-WS-04	Construction of water supply system in Lauana	Ermera	Planned for Implementation 2024	No
E-WS-05	Construction of water supply system in Letefoho Vila	Ermera	Under implementation by the government. Alternate will be identified in 2023 and implemented in 2024	No

E-WS-06	Construction of water supply system in Hatuletan	Ermera	Planned for Implementation 2024	No
La-WS-03	Construction of water supply System in Suco Bauro	Lautem	Planned for implementation 2024	No
La-WS-04	Rehabilitation of water supply (water pump) system in suco souro	Lautem	Planned for Implementation 2024	No
La-WS-06	Construction of water supply system (drilling) in Suco Daudere	Lautem	Implemented by the government in 2022. Replacement will be identified in 2023 and implemented in 2024	No
La-WS-07	Water supply system in suco muapitine	Lautem	Planned for implementation 2023	Granted
La-WS-08	Construction of water supply system (drilling) in Convention Centre Lautem	Lautem	Planned for implementation 2025	No
La-WS-10	Construction of water supply system (drilling) in Suco Omucano	Lautem	Implemented by the government in 2020. Replacement will be identified in 2023 and implemented in 2024	No
La-WS-11	Construction of Water Supply System in Serelau, Lautem	Lautem	Planned for Implementation 2025	No
L-WS-03	Construction of gravity-fed water supply system in Guico	Liquica	Implemented by the government in 2019. Replacement will be identified in 2024 and implemented in 2025	No
V-WS-03	Construction of water supply system (drilling) in Suco uma uain leten	Viqueque	Implemented by the Government in 2017.Replacement will be identified in 2024 and implemented in 2025	No
V-WS-05	Construction of water supply system (drilling) in Suco Raitahu	Viqueque	Implemented by the government in 2021. Replacement will be identified in 2024 and implemented in 2025	No
V-WS-06	Construction of water supply system in ossu decima	Viqueque	Planned for Implementation 2025	No

As detailed in Annex 1, and summarised in Section 1.2 below, the individual water supply schemes have very similar design elements and activities. This activity-based ESMP encompasses all expected variations on the design scope of the units.

Each unit will also be subject to the development of feasibility studies as per national law in Timor Leste for ANLA licencing. These feasibility studies will complement the ESMP with site-specific implementation measures in line with the present document. They will be designed throughout project implementation, as the construction works will be implemented one after the other.

The ESIA and ESMP form the basis for preparation of individual water supply scheme site-specific screening, classification, feasibility and detailed design, and details the Environmental and Social Risk Management Plan for pre-construction, construction, and post-construction phases of all water supply schemes and complies with the national Environment Licensing Law (ELL) of Timor Leste.

The SCR project contributes to reducing the impact of climate change induced disasters on local communities and their infrastructure assets and will result in many positive benefits to rural communities in Timor-Leste which is consistent with the National Strategic Development Plan 2030.

The ESIA and ESMP were prepared by the GCF Project Implementation Unit and reviewed by UNDP BRH and HQ.

1.2 Project Description

The Government of Timor Leste with support from UNDP, is implementing the project "*Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste*" (SRC project hereafter) on adaptation to climate change impacts from extreme natural hazard events with

funding from the GCF. The SRC project is seeking to improve the resilience of vulnerable communities and their assets to climate change-induced hazards to which Timor Leste is prone.

The individual water supply schemes have been prioritized and proposed for climate resilient rehabilitation by the GCF-SRC project through the Municipality Integrated Development Planning (PDIM) framework. The water supply schemes being implemented are a combination of rehabilitation and/or extension of existing schemes, and construction of new schemes, which in general involve the following design elements, which is based on climate proofing measures to address drought, flood, erosion and landslide risks, as well as detailed socio-economics assessment of likely benefits of the water supply systems. The schemes generally comprise of a water source capture, transmission pipeline to the reservoir tank, distribution to several public water taps and continuation of the transmission pipeline to distribution tanks. From the distribution tanks the distribution pipeline takes clean water to public taps in community resident areas. The works will include combinations of the following:

1. Water capture – construction of intake structure, water capture tank installation, drilling of well and pump installation. Works at the water sources includes - site clearance, excavation, setting out the bow plank, building water capture structure, setting out the pipeline (inlet and outlet). Building the fence for water source area.
2. Reservoir tank installation ($60m^3$ and $80m^3$ tanks) - Site preparation, clearance and excavation for building the tank foundation.
3. Distribution tanks construction - Site preparation, clearance and excavation for building the tank foundation.
4. Public taps installation - building the concrete floor of the public tap and box control of the taps.
5. Installation of transmission and distribution pipelines - The excavation of the transmission pipeline from water capturing to reservoir tank and distribution pipeline from the reservoir tank to the distribution tank and to all public taps with dimension of width 40 cm and depth 80 cm. Manual methods of excavation by community beneficiaries as a labour for the project.

Climate risk protection measures include: In the spring area climate proofing interventions include tree planting to protect the water source quality and quantity and ensure longer term supply especially during dry season. The intervention will also include slope protection of the spring source with gabion wall protection in combination with soil bioengineering using the vetiver grass planting and tree planting to reduce the erosion and landslide during rainy season. Along the route of the transmission pipeline, slope protection is also being implemented on steep slopes.

Given that all schemes will be community-managed, following the rehabilitation works, the schemes will be operated and maintained by the communities with representatives on the Community Maintenance Group (CMG) to ensure sustainability of the investment and the benefit of the scheme for the longer term after the expiration of the defects' liability and hand-over.

The planned works will involve site preparatory works and clearance, excavation of new and widening/extension of the existing transmission and distribution lines, topsoil removal, compaction, drainage, cross drainage and cross drainage structures, gabion installation and soil bioengineering works.

The construction-related short-term impacts to the environment such as dust pollution, vibration, and noise that will result from the construction phase are predictable and manageable with appropriate mitigation measures proposed. No negative impacts on cultural or heritage sites are foreseen from clearance or excavation works. However, a Chance Find Procedure (Annex 6) has been developed in case any unknown object or site of cultural significance is discovered during the construction works. To ensure that these mitigation measures are implemented, and that negative impacts are avoided, measures will be included in the BOQ for the works and specifications. Although the sub-project will have minimal negative impacts, these will be carefully monitored and mitigated during implementation. Full compliance with the Environmental and Social Management Plan (ESMP) will be ensured. Regular and consistent monitoring and timely interventions to mitigate and prevent the potential negative impacts will be undertaken by the project team.

1.3 Project Proponent

The proponent for this project is the Ministry of State Administration (MSA), through its senior

representative, the Director General for Rural Development (DGRD). MSA is one of the main Responsible Parties (RP) for the project with specific responsibilities for the implementation of the infrastructure units under Activity 2.2 of Output 2 of the GCF SRC project.

1.4 Legal and institutional framework

The National Environmental Licensing Agency (ANLA) within the Secretary of State for Environment (SSE) has the exclusive right to classify the WS projects. This Environmental and Social Impact Assessment (ESIA) study is in conformance with category C requirements and fulfilment of the stipulated requirements of the national ELL.

The ESIA study was undertaken to identify the risks and impacts, and the ESMP was developed with the mitigative and associated management measures in conformance with UNDP SES Policy. The management of the environmental and social risks and impacts arising from the project also complies with the recommendations, requirements and procedures set forth in the ESMF, which complies with UNDP SES Policy, and was provided by UNDP to the GCF part of the approved GCF proposal.

1.5 Potential Environmental and Social Impacts

During the ESIA and consultation process of the water supply sub-project, the observations from field visits and the perspectives of the host communities, local authorities and other stakeholders were assessed and considered in the ESMP. Based on the evaluation of the risks/impacts that will result from the water supply schemes it can be concluded that the risks and impacts are minor and limited in scale and time. The main risks/impacts that have been identified such as dust and noise pollution will be temporary and the mitigative measures will result in minimal disturbance. Other risks such as the impacts on the natural environment will be either avoided or reversed. Throughout the sub-project cycles the risks/impacts will be monitored and managed as detailed in the ESMP.

Overall, the positive/beneficial impacts of the sub-project far outweigh the temporary and short term environmental and social impacts that will result. Benefits that the sub-project will bring include:

- **Increased water supply** for domestic and hygiene use and consumption;
- **Improvements in health.** Improved hygiene conditions and standards among targeted project communities; cost savings in health care due to reduction in treatments for waterborne diseases; reduced health care expenditure for seeking treatment of waterborne diseases from private providers; reduced non-health-related costs for visits to health facility, such as transport, etc.; avoided productive work days loss.
- **Improved school enrolment and attendance**, especially of girls who spend long hours to collect water; Avoided days of school absenteeism due to lack of water for period hygiene for girls; opportunity costs of caring for a sick child
- **Improved environmental conditions** and water management systems, through the implementation of erosion, landslide and drought risk reduction measures; Improved water quality e.g. provided by source protection leading to improved biodiversity.
- **Improved standards of living.** Reduced and/or saved time for water collection (per household); cost savings due to switching from more expensive/alternative water sources; incremental benefits from additional consumption of water, increased economic and livelihood activities as well as savings from health and water purchases;
- **Reduced resource use conflicts** especially between those close to water sources and those further away;
- **Employment opportunities/Income generation -** The sub-project will contribute to increase in local development and employment as the local populations are likely to be employed during the construction phase. It is also anticipated that indirect employment opportunities will be created within local communities through the provision of services to the construction teams, such as the sale of food and beverages, transportation services for different material to and from the construction sites. Increase in number of employment related to the sector and its ancillary services (e.g. O&M);

- **Local Economic development -** Increased potential for private sector income generating economic activity leading to growth in number of small and medium-sized enterprises in the project area.
- **Improved participation of women and youth.** The sub-project will include eligibility and selection criteria that enables more women and youth to participate, and also provide support to improve women and youth access to knowledge, inputs, and skills during the sub-project. With 20% female headed beneficiary households, the sub-project will enhance and catalyse women and young people's participation in economic activity, through promotion of gender and youth engagement. The sub-project provides a stimulus for women and youth to become more active in employment generation activities.
- **Sustainability.** Improved reliability of water supply from sustainable climate proofed water sources, will potentially result in increased home kitchen gardens for household food production and greater opportunities for participation in economic activity.
- Increased **food and nutrition security resulting from increase in home kitchen gardens and improved food hygiene**;
- Increase in **land value** within the sub-project area, due to availability of domestic water supply.
- **Community project governance**. The proposed sub-project will involve the community and the local stakeholders throughout the sub-project cycle equipping them with management skills in implementation and management of water supply infrastructure sub-project. The sub-project will present the local stakeholders with a learning opportunity on community water supply governance practices, such as: efficient water management, transparency, management of grievances, accountability and record keeping among others.

1.6 Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (ESMP) aims to address the environmental and social safeguards issues arising during the pre-construction, implementation of the sub-project and the post-construction maintenance period. The ESMP is essentially a guidance document to be continually referred to during the pre-construction, construction, maintenance and operation phases of the sub-project. The summary of the main environmental and social safeguard issues and mitigation measures is presented in Table 1-1.

Table 1-1: Summary of the main SES issues to be addressed

Environmental and Social Issues	Anticipated Risk/Impact	Probability of Impact and Impact	Mitigation Measures
Social Management	Lack of Stakeholders Engagement	Prob: 3, Impact: 3 Risk: Medium	Implement the Stakeholders Engagement Plan (SEP).
	Limited participation and involvement of women, youth, people with disabilities (PWD) and other vulnerable people	Prob: 3, Impact: 2 Risk: Medium	Implement a robust Gender Action Plan (GAP)
Cultural Heritage	Sub-Project could damage an important Archaeological and/or Cultural Heritage	Prob: 1, Impact: 3 Risk: Low	Works to avoid known cultural heritage sites. Implement a Chance-Find Procedure (CFP) in case unknown artifacts discovered during works.
Indigenous Peoples	Sub-Project could impact on lands and territories claimed by indigenous peoples (IP)	Prob: 2, Impact: 3 Risk: Medium	The sub-project has been screened using UNDP SESP template. Implement a robust IP Plan (IPP), undertake FPIC process.
Air Quality	Increase in dust generation and spread of dust	Prob: 4, Impact: 3 Risk: Medium	Regular damping of unpaved roads or exposed soils/ground to control dust/particulate matter and keep it down. Limit active construction activities to not more than a total of 500 meters at a time on a 2.0 km road length section to minimize dust. Locate material stockpile areas as far as practicable away from sensitive receptors.

	Increase in emission of air pollutants from vehicles, plant and equipment, machinery	Prob: 4, Impact: 3 Risk: Medium	Ensure vehicles/machines are switched off when not in use. Ensure only vehicles required to undertake works are operated on-site. Ensure all construction vehicles, plant and machinery are well maintained and in full operating condition.
Waste Management	Oil and other potential contaminants are not properly collected, managed and/or disposed	Prob: 3, Impact: 3 Risk: Medium	Proper storage, transport and disposal of hazardous wastes (oily wastes, used batteries, fuel drums) in the designated areas by the national and municipal authorities.
	Construction waste and solid waste generated are not properly managed or disposed	Prob: 3, Impact: 3 Risk: Medium	Recyclable waste (including oil and some construction waste) collected separately and disposed of correctly and/or approved facility as per the Government of Timor-Leste and municipal requirements.
Noise and Vibration	Public nuisance caused by construction/operation activities	Prob: 3, Impact: 2 Risk: Medium	Install noise reduction devices such as silencers and mufflers as appropriate to mobile plant and equipment. Limit the active construction site to not more than 500 meters per 2.0 km lengths Limit work to daylight hours. Schedule noisy construction activities during specific times in the day especially near the sensitive receptors. Identify and avoid the adjacent highly sensitive receptors to vibrations Through implementation of SEP, ensure nearby communities are given advance notice on timing of works, as well as details of the GRM in the event of issues.
Flora and Fauna	New flora and weed species introduced	Prob: 3, Impact: 3 Risk: Medium	Ensure that any manure or soil applied are free of seeds, and that the seeds used for the catchment rehabilitation are weed free. Revegetate disturbed areas using native and locally endemic species that have high habitat value. Consult with MAF
	Disturbance of fauna and their habitat	Prob: 1, Impact: 1 Risk: Low	Limit vegetation clearing to operational areas and minimise habitat disturbance through adequate protection and management of retained vegetation (Use labour-based methods as far as possible). Use temporary fencing protection for root critical zone of the trees. Minimise noise levels and lighting intrusion throughout construction and operation in the vicinity of any sensitive locations.
Land	Loss of soil material and sedimentation at excavation sites, sub-project sites; increased sedimentation of surface and GW systems	Prob: 3 Impact: 3 Risk: Medium	Develop and implement an EDSCP; Proper stockpiling of construction materials, spoils (on flat areas and away from drainage routes); Schedule/stage works to minimize cleared areas and exposed soils at all times; Include check dams in drainage lines to reduce flow velocities and provide some filtration of sediment.
	Erosion and sedimentation caused by construction works	Prob: 3, Impact: 3 Risk: Medium	Implement stormwater and erosion management measures; Silt fences, grassed buffer strips and bioengineering measures installed to reduce water velocity. Avoid long exposure of opened excavated/cut areas; remove excess sediment in all erosion and sediment control structures (e.g. sediment basins, water storage tanks, check dams) when necessary to allow for adequate holding capacity.

	Borrow pits located near to community and left exposed	Prob: 3, Impact: 3 Risk: Medium	Quarry materials will be sourced outside the village/suco from designated nationally approved quarries/suppliers. Project engineer to be advised of selection of suppliers in advance; Engineer and the local authorities to be advised in advance of areas to be excavated for materials; All works sites, particularly excavations, to be appropriately signed and made safe in terms of community; Balancing Cut and Fill to minimize extraction; Ensuring borrow pits are stable; Re-instatement and vegetation of quarries
Social Management	Lack of employment for local community due to imported workers	Prob: 3, Impact: 3 Risk: Medium	Ensure that the contractor hire local labour (especially unskilled labour) from the host community
	Lack of involvement of women, youths and other vulnerable people	Prob: 3, Impact: 3 Risk: Medium	Gender and Action Plan developed and implemented; Compliance with the GRM
Health, safety and security	Health and safety of road users and community	Prob: 3, Impact: 3 Risk: Medium	Training provided to construction workers, adequate signage and warnings to road users to be in place. Adequate information provided to the host community about the safety measures and emergency protocols.
	Prevalence and spread of COVID-19	Prob: 3, Impact: 3 Risk: Medium	Follow all COVID-19 precautionary measures and relevant rules.
	Risk of increased SEAH and GBV particularly due to influx of workers	Prob:1, Impact: 3 Risk: Low	Local workforces will be engaged – in line with Government PDIM requirements. Implementation of GAP Code of Conduct to include SEAH and GBV prevention; UNDP will request that contractors, suppliers and partners adhere to zero tolerance for SEAH and GBV and commit to taking adequate action if faced with SEAH allegations. Contractual arrangements can be terminated if breaches confirmed.
	Given the level of GBV that already exists in Timor-Leste, there is a risk that any shifts in power balances that the sub-project might cause might exacerbate GBV	Prob: 2, Impact: 3 Risk: Medium	Gender issues have been included in the ESIA/ESMP Implementation of GAP Code of Conduct to include SEAH and GBV prevention UNDP will request that contractors, suppliers and partners adhere to zero tolerance for SEAH and GBV and commit to taking adequate action if faced with SEAH allegations.
Labour and working conditions	Poor working conditions and workers health, work related incidents and injuries	Prob: 3, Impact: 3 Risk: Medium	Prepare and implement the OHSMP Train all staff in emergency preparedness and response. Keep a First Aid Kit on site and ensure that drinking water is provided. Personal Protection Equipment (PPEs) are provided to workers

1.7 Implementation

The ESIA study identifies some minor negative social and environmental impacts of the sub-project but also socio- economic benefits to the communities. The potential negative impacts will be minimized through the implementation and rigid monitoring of the recommendations as set out in the ESMP. In addition, the sub-project ESMPs will fully take into consideration the findings and recommendations from GCF.

The Contracting Authority and PMU shall ensure that the contractor implements the recommendations

given in the ESMP and carry out scheduled monitoring to ensure proper implementation of the environmental measures. Monitoring of the ESMP will be done by the PMU Field Coordinator and the Environment Officer to ensure compliance with the requirements. The GRM at local level will be complemented by wider project based GRM to capture and address broader issues.

The Grievance Redress Mechanism (GRM) consultations with municipalities and local authorities have been/will be held, and the GRM committee established and adopted as part of the pre-construction phase of each individual water supply scheme. The GRM provides not only a structure for stakeholders to make complaints or raise issues that may arise during implementation but also a mechanism to address them in a timely and effective manner.

1.8 Mitigation Measures

The mitigation measures are detailed in the ESMP. Most of the mitigation measures are required during the implementation and execution of the construction works on site, therefore, some mitigative measures have been included in the contract specifications and BOQ and will be part the contractor's responsibility. The relevant Environmental and Social Standards according to the national law and international standards such as Labour and Working conditions, Resource Efficiency and Pollution will be attached to the contract and the contractor will be trained to fully understand and compliance. In addition, the contractor is required to submit a detailed Method Statement, which follows the ESMP, prior to mobilization on the construction site. The general specifications that are part of the contract documents also establish specific requirements to comply with these measures.

1.9 Environmental and Social Monitoring Plan

To ensure compliance with the ESMP and that all the mitigation actions are completed accordingly, monitoring will be done by the project engineer, environment officer and field coordinator. Monitoring of the ESMP implementation includes site inspections, reporting and photographic documentation designed to assess and record the contractor's compliance with the ESMP and other applicable regulations. It is also anticipated that additional inspections would be required in response to complaints and issues raised by local communities.

The costs for monitoring during the construction works include the salaries of the Project Engineer, Field Coordinator and Environment Officer's and cost to travel to the site with motorbike and vehicle, mobile communication, and camera.

1.10 Stakeholders' Consultations

For individual water supply scheme extensive consultations are being held with a wide range of stakeholders in the pre-construction stages to gather information about the selected sub-project site. The involvement of a wide range of stakeholders helps to identify the key issues in the early stages of sub-project planning, concerns about the sub-project implementation and development of mitigative measures to address the issues identified.

Stakeholders' consultation with the host community and local authorities involves the PMU, MSA, and Ministry of Public Works and the communities with appropriate representation of men and women. The views expressed are being incorporated into the ESIA and the sub-project design.

Key Summary Findings of the Consultations
During the consultation processes of water supply sub-projects the following information and views were gathered[2], which is likely to equally apply to all water supply sub-projects. All the consultation documents are stored at Project Management Unit (PMU) and can be made available upon request by contacting the Project Manager (Jehangir.khan@ UNDP.org):

- The residents of the local communities that will receive water supply infrastructure sub-projects expressed their appreciation and gave the assurance to fully support the successful implementation of the sub-project and are aware of the positive social, economic and health benefits that the construction of water supply scheme will bring to their

[2] Consultation documentations available from the PMU on request. Please see Table 2.3 for project proponent details.

community.

- The sub-project implementation follows the Municipality Integrated Development Programme (PDIM) planning framework. The water supply schemes have long been the priority of the suco/communities, awaiting implementation.
- Local communities agreed that no compensation is required for any disturbance or encroachment that will occur because of the construction although this will be reduced to the minimum. This will be reconfirmed with communities from each sub-project based on a full site-specific assessment, consultation and participation of local authorities and residents of the host community during the technical assessment and surveys. The declaration letters will be obtained from IPs representatives to this effect following the IP engagement process.
- Residents are aware of the positive social, economic and health benefits that the construction of water supply systems will have on their lives and the resultant climate resilient improvement and safeguard for the community and its physical assets.
- Local community members did not express dissatisfaction with the temporary negative impacts and issues that will arise during the construction works such as the noise from equipment and dust.
- Residents/community also see this as an opportunity to give full support and voluntarily contribute towards the implementation of the sub-project for the development of the community and long-term improvement in their livelihood.
- As is customary in Timorese culture, before the sub-project starts any physical construction works on the ground, the cultural ceremony needs to be done at the time of commencement and completion of the construction works of the project in consideration of the holy (lulik) site that is near to the sub-project site.

2 Introduction

2.1 Background and context

The Government of Timor Leste with support from UNDP, is implementing the project "*Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste*" (SRC project hereafter) on adaptation to climate change impacts from extreme natural hazard events with funding from the GCF. The project is seeking to improve the resilience of vulnerable communities and their assets to climate change-induced hazards to which Timor Leste is prone.

The GCF SRC project is rated moderate as per UNDP SES Standards and, as such, an ESMF was developed to support the Funding Proposal (FP), which was approved by the GCF Board in July 2019, and to further guide the project's implementation.

The present ESIA/ESMP covers the 38 water supply sub-projects (20 GCF funded and 18 Co-financed by the Government). The list below provides the tentative implementation timelines for GCF funded sub-projects. For the Co-financed schemes the planning is done on yearly basis and at this stage the implementation timelines for the duration of the sub-projects are not available. Please See Annex 1 for full list and scope including the beneficiaries of 38 sub-project works.

Table 2-1: List of Water Supply projects

Project Code	Project Name	Municipality	Tentative Implementation Year	ANLA Licence Status
A-WS-01	Construction of gravity-fed water supply system in suku Liurai of Remexio	Aileu	Implemented by the government in 2021. Replacement will be identified in 2023 and will be implemented in 2024	No
A-WS-02	Construction and installation of 2 km gravity-fed water supply system from Tataloko - Erluli in Fahisoi Lequidoe	Aileu	Planned for Implementation in 2024	No
B-WS-02	Water Supply system to suco Laisorulai	Baucau	Planned for Implementation 2025	No
B-WS-03	Water Supply system to aldeia uaimanaboe and uatobala, suco uailili	Baucau	implemented by Government in 2018. Replacement will be identified in 2024 and implemented in 2025	No
B-WS-04	Water Supply system to aldeia uailacama, suco vemase tasi	Baucau	Implemented by the government in 2021. Replacement will be identified in 2024 and will be implemented in 2025	No
E-WS-01	Construction of water supply system in suku Estado	Ermera	Planned for Implementation 2023	Obtained
E-WS-04	Construction of water supply system in Lauana	Ermera	Planned for Implementation 2024	No
E-WS-05	Construction of water supply system in Letefoho Vila	Ermera	Under implementation by the government. Alternate will be identified in 2023 and implemented in 2024	No
E-WS-06	Construction of water supply system in Hatuletan	Ermera	Planned for Implementation 2024	No
La-WS-03	Construction of water supply System in Suco Bauro	Lautem	Planned for implementation 2024	No
La-WS-04	Rehabilitation of water supply (water pump) system in suco souro	Lautem	Planned for Implementation 2024	No
La-WS-06	Construction of water supply system (drilling) in Suco Daudere	Lautem	Implemented by the government in 2022. Replacement will be identified in 2023 and implemented in 2024	No
La-WS-07	Water supply system in suco muapitine	Lautem	Planned for implementation 2023	Granted
La-WS-08	Construction of water supply system (drilling) in Convention Centre Lautem	Lautem	Planned for implementation 2025	No
La-WS-10	Construction of water supply system (drilling) in Suco Omucano	Lautem	Implemented by the government in 2020. Replacement will be identified in 2023 and implemented in 2024	No
La-WS-11	Construction of Water Supply System in Serelau, Lautem	Lautem	Planned for Implementation 2025	No

L-WS-03	Construction of gravity-fed water supply system in Guico	Liquica	Implemented by the government in 2019. Replacement will be identified in 2024 and implemented in 2025	No
V-WS-03	Construction of water supply system (drilling) in Suco uma uain leten	Viqueque	Implemented by the Government in 2017.Replacement will be identified in 2024 and implemented in 2025	No
V-WS-05	Construction of water supply system (drilling) in Suco Raitahu	Viqueque	Implemented by the government in 2021. Replacement will be identified in 2024 and implemented in 2025	No
V-WS-06	Construction of water supply system in ossu decima	Viqueque	Planned for Implementation 2025	NO

As detailed in Annex 1, and summarised in Section 1.2 below, the water supply scheme sub-projects have very similar design elements and activities. This sub-project ESMP encompasses all expected variations on the design scope of the schemes.

Each scheme will also be subject to the development of feasibility studies as per national law in Timor Leste for ANLA licencing. These feasibility studies will complement the ESMP with site-specific implementation measures in line with the present document. They will be designed throughout project implementation, as the construction works are starting one after the other.

The ESIA and ESMP are compliant with the UNDP SES and form the basis for preparation of individual water supply scheme site-specific screening, classification, feasibility and detailed design, and details the Environmental and Social Risk Management Plan for pre-construction, construction, and post-construction phases of all sub-projects and complies with the national Environment Licensing Law (ELL) of Timor Leste.

The sub-project contributes to reducing the impact of climate change induced disasters on local communities and their infrastructure assets and will result in many positive benefits to rural communities in Timor-Leste which is consistent with the National Strategic Development Plan 2030.

2.1.1 Geophysical and Climate change context

Timor Leste occupies the eastern half of the island of Timor and is characterised by steeply sloping terrain overlain by shallow alkaline rocky soils that are fast draining, easily eroded and not particularly fertile. Timor Leste is prone to a number climate-induced hazards including floods, landslides, soil erosion and drought which are increasing in frequency and intensity and result in frequent loss of lives and livelihoods.

Increasing climatic variability and unpredictability, particularly in relation to rainfall and extreme weather events, presents a significant risk to the lives, livelihoods and infrastructure assets of rural communities in Timor Leste. In addition, poor agricultural practices such as slash and burn farming on steep slopes are resulting in changes to physical, hydrological and ecological processes that control floods, drought, soil erosion and landslides at the catchment scale and impacting on the frequency, intensity and spatial distribution of natural hazards, which is resulting in the accelerated deterioration of already limited physical infrastructure and impacting the livelihoods of rural agricultural communities.

Rural populations of Timor Leste are highly exposed to a number of hazards including flash floods, landslides, soil erosion, coastal flooding and drought, due to unfavourable terrain, socio-economic factors and intensification of these climate-induced hazards over time. In addition, anthropogenic factors such as poor, non-climate-resilient design and application of infrastructure construction standards and the limited investment in operation and maintenance, are exacerbating exposure and resulting in the failure of small-scale rural infrastructure, which is essential to the development of rural communities. Impacts include isolation of communities when roads and bridges are damaged by localized extreme events, contamination of unprotected water sources, reduction in yield of water supply sources due to droughts, flooding of communities due to inadequate or failing flood defences. In addition, the institutional and financial capacity of Local Administrations and communities to adapt to the situation is weak. This includes the ability of municipality planning officials, engineers and decision makers to identify areas that are critically vulnerable to climate hazards, to draw the links between ecosystems management and infrastructure development, and to identify, appraise, prioritize, design,

cost and 'budget in' greater resilience measures. There is also a weak ability to understand and address gender and climate change related development and equity issues at local level.

Rural Infrastructure Investment under the PDIM and PNDS planning which prioritises investments in small scale rural infrastructure through the government budgetary allocations do not currently systematically take account of climate risks and therefore do not include climate-proofing unless implemented by specific International Development Banks or donor implemented projects. This is due to a lack of norms, guidelines and methods for implementation of such measures, as well as a perceived higher cost of climate proofing.

The SRC project is safeguarding communities and their social and economic assets from climate through the improvement of the knowledge, skills and capacity to secure functional longevity of the infrastructure under the conditions of changing climate.

2.1.2 Socio-economic and development context

Timor Leste gained independence only in 2002, following its 1999 vote for independence after extended conflict with Indonesia. It is therefore among the youngest countries in the world. It is a least developed country, a post-conflict society with a fast-growing population that remains dependent upon subsistence agriculture. Approximately 70 percent of Timor-Leste's 1.06 million people live in badly serviced rural areas. Low agricultural production combined with a lack of access to markets and inputs contributes to high food insecurity, particularly in rural areas. 74 percent of the rural population suffers moderate and severe food insecurity. Annual food deficits also contribute to malnutrition rates, especially for children and women, which have been among the highest in the world. From an economic standpoint, inflation remains high and with an estimated 61.5 percent of the population under the age of 25, lack of viable employment and income generation opportunities continues to present a challenge and risk for the youth population.

Since gaining independence in 1999, Timor-Leste has faced great challenges in rebuilding its infrastructure, strengthening the civil administration, and generating jobs for young people entering the work force. This pervasive infrastructure deficit keeps the rural population in isolation, lacking access to basic public services and deprived of mobility and economic opportunities. A network infrastructure is crucial for the functioning of today's economy and society, notably infrastructure for energy (e.g., grids, power stations, pipelines), transport related fixed assets, such as roads and bridges and water supply (such as, water supply pipelines, reservoirs, wastewater treatment facilities and irrigation canals). They are sets of interconnected networks of physical infrastructure which facilitate the production and distribution of goods and economic services and form the basis for the provision of basic social services. There are considerable gaps in this network infrastructure in Timor Leste, hindering service delivery, growth and economic development. In fact, many country assessments for Timor Leste recognised a direct correlation between the high incidents of poverty and significant gaps in infrastructure. It therefore comes as no surprise that the government's priority investments are directed towards addressing the current infrastructure deficit that is considered the major binding constraint for socio-economic development. It is critical however that climate change impacts are duly addressed to ensure that these foundational investments and associated services are durable in support of local development and long-term resilience.

2.1.3 Programme Description and Main Activities

The project will:

- strengthen capacities of mandated institutions to assess and manage the risks of climate induced physical damages and economic losses. GCF funds will be used to embed new technical skills, improve availability of risk information and create effective response mechanisms.
- invest in small-scale rural infrastructure to ensure their resilience to climate change induced hazards. GCF funds will be used to improve engineering skills and practices for climate proofing of rural infrastructure: roads and bridges; water supply and irrigation; and drainage and flood protection. These infrastructure units will be established as the means to address

adaptation deficit where the social vulnerabilities and exposure to climate risks are particularly high.

- invest in livelihoods and land use management that is conducive to a long-term resilience of the target communities and their physical and economic assets. The project will enable land use and livelihoods that benefit from agro-forestry and forest products and contribute to forest rehabilitation and maintenance.

The following complementary outputs will be delivered:

- **Output 1:** Policies and institutions strengthened to enable climate resilient small-scale rural infrastructure development and climate risk reduction in the particularly vulnerable communities.
- **Output 2:** Climate resilient small-scale rural infrastructure deployed to benefit 175,840 people across six priority districts.

It is expected that the proposed project adaptation interventions, will provide essential climate resilient infrastructure to the most vulnerable, enable them to participate more effectively in a productive society and provide access to essential clean water (through water supply infrastructure), transportation (through road and bridge construction and rehabilitation), increased and socio-economic development and protection of people, property and community assets from floods, landslide and erosion risks. In addition, farmers, by adopting climate-resilient production practices through agro-forestry will engage in diversified and integrated farming systems while addressing land degradation and thus protecting infrastructure. Support will be dedicated to addressing land degradation in infrastructure sub-catchments, to restore critical ecosystem services and increase overall long-term resilience of infrastructure and people against climate-induced hazards.

The objective of the SRC project is to safeguard vulnerable communities and their physical assets from climate change-induced disasters. The project targets 175,840 direct beneficiaries, an estimated 15% of the total population and will bring about many positive benefits for the local community and contributes to reducing the impact of climate change induced disasters on and their infrastructure assets. Benefits include increased climate resilience for small-scale infrastructure as well as 300 ha of reforested and rehabilitated land to buffer against climate-induced disasters.

2.2 Rationale and objectives of the ESIA and ESMP

The ESMF which was developed for the overall project provides the guiding framework for the site specific Environmental and Social Impact Assessment (ESIA) study and the Environmental and Social Management Plan (ESMP) in conformance with UNDP's SES Policy and accordingly the project level standards.

This ESIA and ESMP was prepared in line with the requirements of the national Environment Licensing Law of Timor-Leste and UNDP SES Policy considering the anticipated impacts associated with the proposed sub-project, such as air pollution from dust particles, emissions, noise pollution among other effects.

The ESIA study for water supply scheme sub-projects and Environmental and Social Management Plan (ESMP) will guide the sub-project implementation and ensure that adequate measures are taken to protect and minimize any potential adverse environmental and social impacts associated with the proposed construction works. Also, this process is in line with Article 61 of the constitution of Timor-Leste that everyone has a duty to conserve and protect the environment in the interest of future generations.

This ESMP provides the actions required to be taken for managing and keeping the negative impacts and risks of the proposed water supply scheme sub-project to a minimum, while enhancing the significant positive and beneficial impacts.

Specific objectives are:

- To ensure that every individual water supply scheme sub-project operation complies with relevant national environmental and social regulations and international best practices in management and coordination of environmental and social issues during construction.
- To identify likely environmental, social and safety risks and impacts that may emerge as consequences of sub-project activities during implementation and post construction period.
- To propose remedial or mitigative measures to address risks and negative impacts that have been envisaged throughout sub-project life cycle including post-construction operation and maintenance phase.
- Propose institutional arrangements, relevant regulations, roles and responsibilities of various stakeholders that will be critical in implementation and monitoring of the ESMP.

The objectives of the ESIA and ESMP are summarised below in Table 2-2.

Table 2-2: ESIA and ESMP objectives

Process	Objectives
ESIA	The preparation of an ESIA to inform the design of the Subprojects to ensure and to: i. effectively identify environmental and social risks and impacts that may arise as a result of sub-project activities during implementation and post construction period. ii. ensure possible adverse effects can be avoided and/or minimized iii. inform and consult with the public concerning the ongoing sub-projects and their potential impacts on the environment and social systems iv. promote sustainable use and conservation of the natural resources and ecosystems in the Subproject area.
ESMP	Preparing, monitoring and reporting on an ESMP for Subprojects to: i. define and propose remedial measures which avoid, manage and mitigate negative environmental and social impacts and enhance benefits of the proposed developments throughout sub-project life cycle including post-construction operation and maintenance phase. ii. To ensure that the sub-project operation complies with relevant national environmental and social regulations and international best practices in management and coordination of environmental and social issues during construction. iii. Propose institutional arrangements, relevant regulations, roles and responsibilities of various stakeholders that will be critical in implementation and monitoring of the ESMP. iv. guide the ongoing process of monitoring and reporting on implementation of Subprojects v. enhance the benefits of use and conservation of the natural resources and ecosystems in the project area

ESIA and ESMP approach and methodology

Project Screening and ESIA scoping

The overall "Safeguarding Rural Communities and their Physical Assets from Climate Induced Disaster in Timor Leste" (SRC) project was screened using the UNDP SESP as part of the project development and ESMF preparation phase. As required, each individual water supply scheme sub-project has been re-screened to ensure that no unacceptable risks are identified and to inform the mitigation measures that will be required. Following screening, the scope of studies to understand the issues and types of risk analysis required for each risk and impact area e.g., water, erosion, noise etc. were determined, and data availability identified.

In accordance with the requirements of the national ELL for individual water supply scheme sub-project screening, technical, socio-economic, and environmental aspects of the project are assessed and considered, and the documentation required by ANLA prepared. ANLA, as the responsible national authority, conduct their own site visits and individual scheme project screening in accordance with the ELL to verify the information that is prepared prior to classification and granting approval to proceed with the implementation of the individual water supply scheme.

ESIA approach

The purpose of conducting the Environmental & Social Impact Assessment is to ensure that the individual water supply scheme sub-project is environmentally and socially sound and fits well with the community/ beneficiaries needs and aspirations. The study therefore describes and quantifies the potential impacts on the biophysical environment, and the beneficiary and neighbouring populations prior to, during, and on completion of the individual water supply scheme sub-project . Mitigation measures are proposed for any negative impacts identified and an environmental and social management and monitoring plan has been developed covering each phase of the individual water supply scheme sub-project (pe-construction, construction and operation). In order to achieve the objectives of the Environmental & Social Impact Assessment, the following strategies were adopted:

- Qualitative assessments of the state of the environment in the individual water supply scheme sub-project area
- Prediction and evaluation of positive and negative environmental and social impacts
- Identification of the mitigation measures for the adverse environmental and social impacts, and
- Formulation of an Environmental and Social Management Plan (ESMP)

The ESIA activities consist of desk studies, fieldwork, baseline studies/surveys (flora and fauna, water quality, socio-economic surveys, gender surveys etc.), participatory interviews, focus group discussions, and questionnaires among others, leading to the preparation of this report and is conducted by UNDP SRC PMU and project Team, and project Implementing partners. Specifically, the following activities are undertaken during the study.

A desk study to review the available reports, development plans and maps in order to compile relevant biophysical and socio-economic information about the study area is conducted. The following documents are reviewed for each water supply sub-project and inform the ESIA and ESMP:

1) Project documents fully characterising all aspects of the individual water supply scheme sub-project
2) All stakeholder consultation meeting notes (FGD meeting notes, KII meeting notes, GRM meeting notes, Gender mainstreaming meetings, FPIC meeting notes etc.) and participants list
3) Declaration Letter (if applicable) – Right to Withdrawal
4) Maps and photos of the Project site and the area that may be affected by the individual water supply scheme sub-project's direct, indirect, and cumulative impacts (i.e. area of influence including benefit area).
5) All baseline surveys conducted (flora and fauna, water quality, socio-economic surveys, gender surveys etc.)
6) Gender Action Plan

7) Indigenous People's Plan
8) Technical design documents

Targeted, focused analysis and assessment specific to the adverse risks and impacts identified during the screening and scoping processes, are undertaken. All individual water supply scheme sub-project are identified as **Moderate** Risk projects due to the limited spatial and temporal adverse social and environmental risks and impacts. Hence targeted assessment of the potential social and environmental risks and impacts have been developed to avoid, mitigate, and manage the risk based on the mitigation hierarchy (avoid, minimize, mitigate, offset).

Preparation of the ESMP

Based on the findings of the ESIA, the ESMP was prepared. The ESMP was developed to define social and environmental impact mitigation actions/measures per the mitigation hierarchy. It details social and environmental monitoring to be conducted during sub-project implementation and provides a plan to assess and build capacity to implement the environmental and social management plan and other project environmental and social components.

Based on screening and consultations, most of the potential adverse social and environmental risks and impacts were found to be well understood, clearly circumscribed, and can be easily avoided or mitigated. The analysis of social and environmental risks and impacts and recommended management actions were identified based on the following targeted focused assessments which were undertaken to inform the ESMP and Monitoring plan:

a. Environmental and Social Audit
b. Hazard or Risk Assessment
c. Social baseline studies
d. Gender baseline and risk assessment
e. Water quality Assessment
f. Indigenous People assessment

Proposed management measures/plans will be incorporated into the individual water supply scheme sub-project budget, risk log, and monitoring framework for the individual water supply scheme sub-project .

ESIA/ESMP's will be publicly disclosed and public consultations conducted, with project affected stakeholders and a plan developed to communicate progress with implementation and effectiveness of the environmental and social management plan. The documents shall be disclosed in line with the stakeholder engagement plan developed for the project. All comments/suggestions and questions will be processed and together with feedback incorporated in the final version of the ESIA/ESMP and captured in the minutes of the meeting.

The ESMP has been prepared prior to the bidding of works and the PMU is responsible to integrate the final version into tender documents for the selected individual water supply scheme sub-project and in the contracts for their execution to be signed with the selected works contractor. The Contract agreements shall impose the Contractors' obligation to comply with the requirements specified in the ESMP. The Contractors will be required to demonstrate that all mitigation measures have been accounted for to ensure individual water supply scheme sub-project implementation in environmentally and socially acceptable manner.

Implementation of mitigation measures and environmental and social monitoring is an obligation of the Contractors compliant to the ESMP. The Supervision Consultant for the works engaged by PMU, alongside other routine activities, shall supervise the Contractor`s environmental and social performance and verify compliance with ESMP.

Intended users

The aim of this document is to communicate to the key stakeholders (including the project team, contractor, sub-contractors, national and local authorities, and safeguards team), about the potential environmental and social issues associated with the proposed sub-project, the procedures and mitigation measures that are required to be implemented.

The ESMP shall be the guiding document for implementation of all water supply scheme during construction, defects liability, operation and maintenance phases of each individual water supply scheme sub-project component. The project team will utilize this ESMP during individual water supply scheme sub-project execution to achieve effective, appropriate environmental and social management. Compliance with the UNDP SES is required for UNDP projects and as a condition of UNDP's accreditation with GCF. The ESMP is to be submitted for approval by UNDP and GCF prior to the commencement of the construction works.

Details of the project proponent

The proponent for this project is the Ministry of State Administration (MSA), through its senior representative, the Director General for Rural Development (DGRD). MSA is one of the main Responsible Parties (RP) for the project with specific responsibilities for the implementation of the infrastructure units under Activity 2.1 and 2.2 of Output 2 of the project.

Table 2-3: Project Proponent Details

Address	República Democrática de Timor-Leste Ministério Administração Estatál Direcção Geral Do Dezemvolvimento Rurál Rua Jacinto Candido Dili, Timor-Leste, Telf. +670 3339077
Name of Director General	Mr. Rosito Guterres Director General Rural Development Ministry State of Administration (MSA)
Telephone	+ 670-77120725
Email	dgdrtimorleste@gmail.com
Name of Project Director	Mr. Augusto Pinto National Director of Climate Change and GCF Project Director (+660 78427259) & ano.pinto@gmail.com
Name of PMU-UNDP	Mr. Jehangir Khan Project Manager (+670-77729826) & (jehangir.khan@undp.org)

A total of 130 infrastructure units comprising 47 rural roads and bridges, 20 flood protection units, **38 water supply systems** and 25 irrigation schemes have been selected for implementation over the implementation period of the project. Sixty-six units are funded directly from GCF grants while the other 64 units are from GoTL/MSA's co-financing and will be implemented following the PDIM and PNDS processes.

The relevant Municipal Administration is the Contracting Authority and will be responsible for the implementation of the water supply scheme sub-projects within the local development PDIM framework. During the individual water supply scheme technical assessment and preparation stage, technical staff from the Municipality, Administrative Post and local authorities in municipality are fully engaged and involved.

The ESMP, also referred to as 'Project Document' according to ELL, was submitted by the project proponent to ANLA in accordance with Decree Law 05/2011 on Environmental Licensing. The details of the proponent are provided in Table 2-3.

3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Key relevant components of the legal framework

3.1.1 Legislation, policies and regulations relevant to the sub-project

The hierarchy of laws in Timor-Leste is as follows:

- The Constitution of Timor-Leste
- The Civil Code
- Laws passed by the National Parliament or by the government exercising its powers under Section 96 of the Constitution of Timor-Leste
- United Nations Transitional Administration in East Timor (UNTAET) Regulations
- Indonesian Law (applied before 25 October 1999)
- Customary Law

3.2 National Policies and Legal Frameworks[3]

Decree-Law No. 4/2004 on water supply for public consumption - This Decree-Law, composed of 32 articles divided in seven Chapters, sets out the rules on water supply for public consumption. Potable water is defined as an exhaustible and vulnerable resource, essential to the sustenance of life and to the development of the environment and bears an economic value in all of its concurrent uses. It is therefore constitutionally incumbent upon the State to preserve and to enhance such economic value. The decree law creates and establishes the conditions for water distribution for domestic use. It states that it is incumbent upon the State to ensure the existence and availability of a universal water distribution service. Chapter IV outlines the provisions for Water Distribution Outside of Urban Areas – Community-run water supply systems. It states that 1) the water supply system outside of urban areas shall be managed by water management groups, which shall be appointed by the community, without prejudice to the right of the State to intervene; 2) Where no water management groups exist, the water supply system shall be managed directly by the community; 3) The Water and Sanitation Service shall provide assistance to the community with the aim of establishing a water management group, which are to be established in accordance with the decree law as well as customary rules and uses in force in this domain.

Decree-Law No. 38/2020 creating the National Authority for Water and Sanitation and approving the related Statute - This Decree-Law, consisting of 29 articles divided into five Chapters, creates the National Authority for Water and Sanitation and approves the related Statute (ANAS, I.P.). It establishes composition, duties and responsibilities of the ANAS, I.P. aimed at proposing, monitoring and ensuring the implementation of national policy in the field of water resources, in order to guarantee its sustainable and integrated management, as well as the supervision and inspection of the sectors of public water supply, sanitation of urban waste water and urban solid waste. In particular, ANAS, I.P., is entitled to carry out the following duties: a) support the Government in the definition of the water resources management, water supply and sanitation policy; b) prepare proposals for water resources management plans to be submitted to the tutelage; c) support the work of the Coordination Council for Integrated Water Resources Management; d) promote the rational use of water through Water Resources Management Planning; e) propose the creation of areas in the public water domain; f) coordinate, at the national level, the adoption of exceptional measures in extreme drought or flood

[3] This section discusses national policies and legal frameworks relevant to the water supply sub-projects. Please see the ESMF for national policies and legal frameworks identified for the overall SRC project during proposal development

situations; g) ensure the monitoring, inspection and licensing of the use of water resources in accordance with the law and water resource management plans; h) propose to the Government the approval of regulatory norms related to the water resources sector, water supply and sanitation; i) regulate water supply and urban wastewater sanitation services and the quality of the service provided to users by management entities; j) ensure the monitoring, inspection and licensing of the activity of entities managing water supply and sanitation systems, in accordance with the law; k) control the correct use of water supply and sanitation systems by consumers, etc.

Occupational Health and Safety Labor Law No. 4/2012 of 21 February. This Labor Law provides for the regulations on labour relations applicable to individual and collective labour relations. Of specific interests are Articles 6 on Principle of Equality, Articles 19, 20 and 21 on Mutual duties and responsibilities of employee and Workers, Article 34 on Occupational Security, Hygiene and Health, Article 35 on General obligations of the employer to ensure dignified conditions for occupational security, hygiene and health, Article 68 on Minimum Age for Work Admission, Article 69 on the definition of light work, and Section 3, Article 71 on Workers with Disabilities.

DL 6/2020 Legal Regime for Protection and Conservation of Biodiversity. This decree-law was enacted by GoTL on 6 February 2020, identifying 44 terrestrial and two marine protected areas and superseding the UNTAET Regulation No. 2000/19 stipulated by the United Nations in 2000.

Decree-Law No. 15/2019 Organic law for the State Secretary for Environment establishing the Secretary of State for Environment under the VIII Constitutional Government of Timor-Leste.

Decree of Law No. 6/2020 on Legal Regime for Protection of Biodiversity - intended to provide an overarching framework for action on the ground, legal regimes and instruments provide the interpretation and protection services necessary for ensuring that policy and regulatory regimes on biodiversity including habitat destruction, overexploitation, the spreading of invasive alien species, climate change and population pressure.

Decree Law No. 33/2017 of 6 September, the Legal Law of Cultural Heritage - to create the condition for inventorying, preserving, protection and valuing the Timorese cultural heritage; It is also highlighted the citizen responsibility in guaranteeing the cultural diversity, contributing to the protection and dissemination in many sorts of cultural heritages.

Decree-Law No. 5/2004 on Community Authorities in East Timor - This Decree-Law, composed of nine Sections, rules on Community Authorities. Community Authorities shall be the suco chiefs and the members of suco councils elected under the terms of Law No. 2/2004 of 18 February 2004. Community Authorities shall perform their functions and exercise their competencies with due respect for the Constitution and laws regarding State property, especially renewable and non-renewable natural resources.

Ministerial Order No.16/2017 Establishing the formal Recognition of Traditional Suco and indigenous Villages

3.3 Specific legislative provisions for rural water supply - Provisions in the Decree Law No. 04/2004 for rural water supply systems

The decree law creates and establishes the conditions for water distribution for domestic use. It states that it is incumbent upon the State to ensure the existence and availability of a universal water distribution service. Chapter IV (Articles 21 to 25) outlines the provisions for Water Distribution Outside of Urban Areas – Community-run water supply systems.

Article 21 on states that 1) the water supply system outside of urban areas shall be managed by water management groups, which shall be appointed by the community, without prejudice to the right of the State to intervene; 2) Where no water management groups exist, the water supply system shall be managed directly by the community; 3) The Water and Sanitation Service shall provide assistance to the community with the aim of establishing a water management group, which are to be established in accordance with the decree law as well as customary rules and uses in force in this domain.

Article 22 outlines the provisions for the establishment and functioning of Water Management Groups as follows:

1. The water management groups established in accordance with the present decree-law shall not have juridical personality.
2. The water management groups shall be established in accordance with the customary rules and uses in force in this domain.
3. The procedure shall include a document signed by the local leaders and by the leader of the water management group.
4. The document shall include, at least, the following information:
    a) the way the water management group operates;
    b) the obligations to which the water management group is subject, which must necessarily include the obligation to supply water to whoever intends to be admitted as a member of the group;
    c) the names of the leader and of the managers of the water management group;
    d) the procedures for changing the manner in which the water is supplied to members of the water management group;
    e) the type of payment for the water services;
    f) the mode for settling disputes;
    g) the management of revenues originating from water services; and
    h) the distribution of water to members of the water management group
5. The leader of the water management group shall be responsible for the drafting of the document.
6. A water management group shall be constituted through the required document.
7. The Minister of Transport, Communications and Public Works and the Minister of Planning and Finance shall establish the maximum fees that can by charged by the water management groups while taking into account the complexity of the water supply system.

Article 23 outlines the following provisions for Management of the Water supply system

1. The water management groups shall be responsible for the supply of water to the communities in an appropriate, secure and sustainable manner.
2. The management of the water supply system outside of urban areas shall be governed by customary rules and uses and, in particular, by the:
    a) traditional methods of selecting leaders, group members or groups that will manage water in a village or community;
    b) traditional methods of defining the amounts of fees or charges to be paid by the water supply services;
    c) traditional methods of settling the allocation of water between hamlets and communities; and
    d) traditional modalities for settling disputes.
3. The Water and Sanitation Service shall monitor and evaluate the global effectiveness of the water management groups in order to enable the attainment of the objectives of this decree-law.
4. Whenever it deems necessary, the Water and Sanitation Service may monitor and evaluate the functioning of each water management group.

Article 23 on Water Distribution Inside and Outside of Communities provides that:

1. The water management groups shall follow the customary rules and uses for distributing water between and inside of communities.

2. The Water and Sanitation Service shall provide technical assistance in order to facilitate water distribution between communities.
3. The Water and Sanitation Service may assist communities in settling disputes.

Article 25 on Technical Assistance provides that:

1. The Water and Sanitation Service shall co-ordinate the technical assistance provided to water management groups.
2. Where the Water and Sanitation Service shall have the financial capacity and the necessary equipment, it may assume responsibility for constructing, managing and maintaining a complex and main piping system which shall provide water to a water supply system managed by various hamlets or communities.
3. For purposes of the provisions of Article 25.2 above, the hamlets or communities shall pay a fee to the Water and Sanitation Service in order to cover the administration and maintenance costs of the main piping system.
4. The Water and Management Service shall make provision in its annual budget for funds to be earmarked for technical assistance to water management groups.

In 2020, the Government of Timor-Leste established Bee Timor-Leste (BTL), the state owned water utility, under Decree-law No. 41, 2020; and the National Authority for Water and Sanitation under Decree-law No. 38, 2020. Prior to the establishment of these institutions, the Directorate General for Water and Sanitation was responsible for capital investment in urban water supply and sanitation; and the municipal water, sanitation, and environment services authorities were responsible for the day-to-day operation and maintenance (O&M) of the urban and rural water supply and sanitation infrastructure, and capital investment in rural water supply and sanitation infrastructure. The municipal water, sanitation, and environment services authorities reported to their respective municipal administrations but had limited resources or autonomy to undertake more than basic operations. Lines of communication and delegation between the central government and the municipal administration were unclear. BTL has autonomy over the management of public urban drinking water and sanitation assets, while the regulatory role for water resources and activities in the sanitation subsector has been transferred to a new regulatory authority. The consolidated arrangement addresses sector fragmentation and will allow greater clarity and transparency of roles.

3.4 Environmental Institutions and National Licensing Procedures

Environmental assessment is required under the Environmental Licensing Law (ELL) Decree Law 5/2011 of Timor-Leste. The National Environmental Licensing Agency (ANLA) under the Secretary of State for the Environment is the Authority that has the mandate for reviewing applications and carrying out the environmental screening process to verify the information and project documentation which is submitted by the project proponent for screening and granting of the Environmental License.

The current organizational structure of SSE showing ANLA is shown in the figure below.

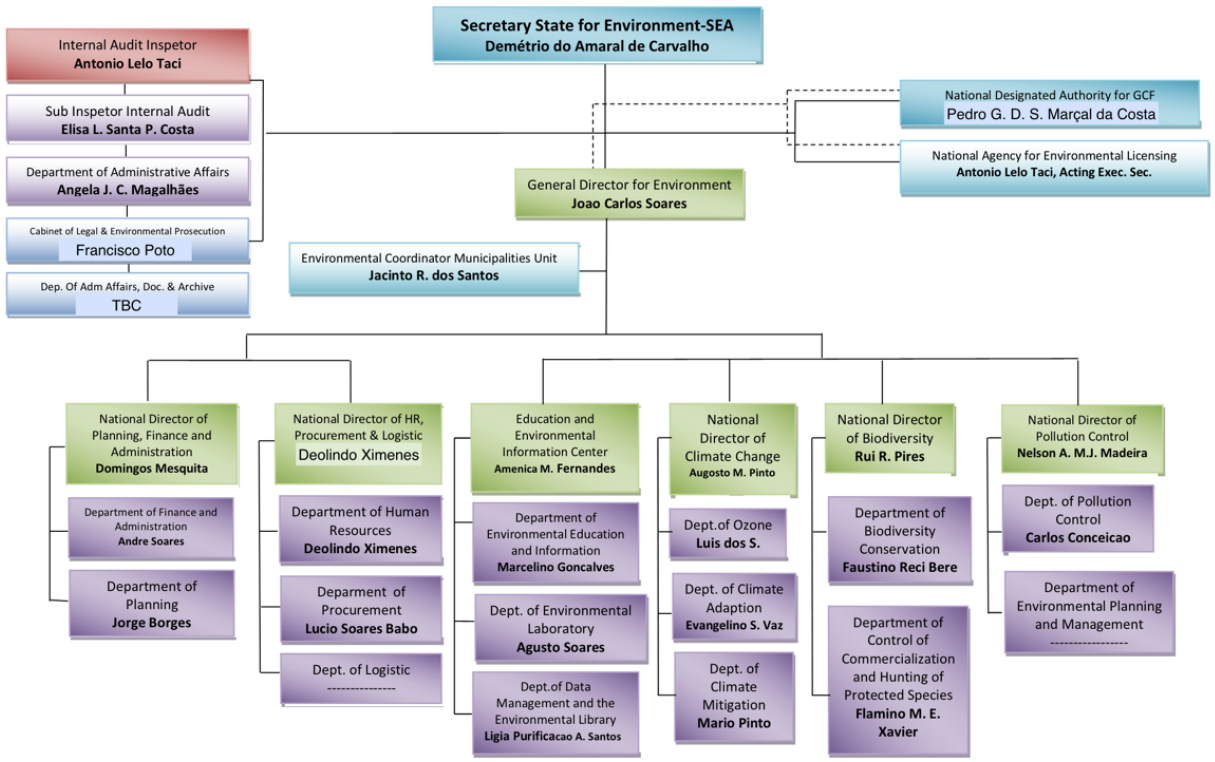


Figure 3-1: Organizational Structure of SSE

Decree Law 5/2011 Environmental Licensing Law establishes the system for screening (classification) of proposed public and private projects likely to produce environmental and social impacts on the environment. Chapter 2 of the ELL sets out the procedures and requirements for screening and environmental licensing. Every project proponent shall submit the project's Environmental and Social Management Plan which shall provide sufficient information for the environmental Authority to decide on the classification of the proposed project (Category A, B or C).

Article 4 of the ELL sets out the 3 different categories of proposed projects: A, B and C. Category C projects are not required to go through any environmental assessment procedure (other than classification).

Table 3-1: Categories of proposed project as per ELL

Category	Description of requirement as per ELL
A	EIA for Category A sub-projects: an environmental impact statement (EIS) and environmental management plan (EMP) is required
B	IEE for Category B sub-projects: a simplified environmental impact statement (SEIS) and environmental management plan (EMP) required
C	Category C projects are not required to go through any environmental assessment procedure (other than classification)

The classification of projects is done mainly by reference to the categories of activities set out in Annexes 1 and 2 of the ELL. Articles 5 and 6 of the ELL set out the basic procedure for classification of projects.

The Implementing Partner (IP), Responsible Parties (RPs) and AE are expected to undertake and/or put in place any adequate measures to ensure that the management of the environmental and social risks and impacts arising from the Funded Activity always complies with the recommendations, requirements and procedures set forth in the ESMF, which was provided by the Accredited Entity to the Fund before the Approval Decision.

The Implementing Partner for this project is the Secretary of State for Environment (SSE) under the NIM, and Ministry of State Administration as the Responsible Party and are responsible for the overall management of the project. In accordance with the national environmental requirements, the project document for the sub-project has been submitted for classification as per Annex 1 of the ELL and the environmental license issued accordingly as per Annex 11 of this document. Prior to submission to ANLA/SSE the sub-project safeguard documents were reviewed and approved by UNDP.

3.4.1 Legislative requirements of the ELL

The Regulations apply to all proposed projects in accordance with the ELL. The Regulation sets out the clear steps of the environmental assessment procedures from classification of the proposed project to the decision whether or not to grant an Environmental License. The steps involved include:

- Classification of the proposed project (screening)
- Preparation of the Terms of Reference (ToR) for the study to be carried out to produce the EIS and the EMP – for category A projects only
    - The minimum contents of the EIS – for Category A projects only
    - The minimum contents of the SEIS – for Category B projects only
    - The minimum contents of the EMP – for both Category A and Category B projects.

Article 4 of the ELL sets out the 3 different categories of proposed projects: A, B and C. Category C projects are not required to go through any environmental assessment procedure (other than classification). The classification of projects is done mainly by reference to the categories of activities set out in Annexes 1 and 2 of the ELL. Annex 1 lists the project types that would be classified as Category A. Sub-categories I to XII list specific types of activities (with thresholds). Sub-category XII list's location factors that would apply to any type of activity. Annex 2 lists eleven sub-categories of project types that fall within Category B.

Article 4.2 of the ELL allows for the classification of projects which do not fall within any of the list of activities listed in Annexes 1 or 2 of the ELL. It also allows for, what is effectively, the re-classification of a project depending on the significance of any adverse impacts.

Articles 5 and 6 of the ELL set out the basic procedure for classification of projects.

Chapter 2 of the Regulation sets out the procedures and requirements for screening (classification) of proposed projects. The project proponent must submit to the Environmental Authority sufficient information for the Environmental Authority to make a decision on the classification of the proposed project (Category A, B or C).

Annex 1 of the Regulation sets out the format for the submission of the Project Document for classification of the proposed project. The Project Document must contain, as relevant:

- Details of the project proponent
- Location and scale of the project, including maps and plans showing existing features in the area
- Information about the district and villages in the area of the proposed project
- Plans and technical drawings of the proposed project
- The feasibility study
- Information about land and water uses

- A brief description of likely environmental impacts, including biophysical and socio-economic effects
- Information about any public consultations that have already taken place
- Information about any consultations with other authorities
- The proponent's proposal for classification of the project.
- Executive Summary

Annexure 7 contains the Application Form for an Environmental License and Annexure 8 contains the Project Document checklist (a Project Document must accompany the application as noted above).

The Environmental Authority must then make a determination of the actual classification of the proposed project. In making its determination the Environmental Authority must take into account the Project Document submitted by the proponent, any opinions or other documents coming from other authorities, the Annexes 1 and 2 of the ELL, and the criteria set out in Annex 2 of the Regulation.

The sub-projects under this proposed project will require permits under the ELL, as such environmental impact assessments will be undertaken. An example of EIA is contained within Annexure 5.

Prior to submission to MCIE, all sub-projects safeguard documents shall also be reviewed and approved by the UNDP. This will ensure that all sub-projects are subjected to appropriate environmental and social vetting.

3.4.2 Multilateral agreements and biodiversity protocols

Timor Leste is a signatory to a number of international and regional agreements and conventions, which are related to the environment. They include:

- 1956 Plant Protection Agreement For The Asia And Pacific Region
- 1992 Convention On Biological Diversity
- 1994 Convention To Combat Desertification In Those Countries Experiencing Serious Drought And/Or Desertification, Particularly In Africa
- 1997 Kyoto Protocol To The United Nations Framework Convention On Climate Change
- 003-05-21 World Health Organization Framework Convention On Tobacco Control
- 2015-12-12 Paris Agreement under the United Nations Framework Convention on Climate Change
- 1999 Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer
- 1985 Vienna Convention for the Protection of the Ozone Layer
- 1976 Agreement establishing the International Fund for Agricultural Development
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- International Plant Protection Convention (IPPC)
- International Convention for the Prevention of Pollution from Ships (MARPOL Convention)
- International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty)
- Convention on Wetlands of International Importance (Ramsar Convention)
- World Heritage Convention

3.5 GoTL relevant policy and strategies for Public Rural Water supply

3.5.1 Strategic Development Plan 2011-2030 (SDP)

The SDP emphasizes infrastructure development and recognizes infrastructure as one of the three pillars of the strategic and sustainable development vision of the country. Though there is no explicit mention of climate proofing the infrastructures, the SDP highlights the need to build infrastructure which have better designs and engineering considerations that can withstand the impacts of landslides and erosions. SDP also highlights the need to cut down on the maintenance costs, particularly emergency repair costs.

3.5.1.1 Strategy for infrastructure development in TL

A central pillar of the GoTL's Strategic Development Plan (2011-2030) is the building and maintenance of core and productive infrastructure to enable Timor-Leste to develop economically and socially. The scale and cost of addressing the infrastructure deficit, however, is large. The SDP (2011-2030) has the following strategy for water supply infrastructure in Timor Leste.

Water Supply

The two most significant causes of infant and child mortality in Timor-Leste – lower respiratory infection and diarrheal disease – are directly related to a lack of water supply and poor sanitation and hygiene. Investment in sanitation is an investment in health, education, the environment and poverty reduction. Improved sanitation typically yields about $9 worth of benefits for every $1 spent, based on a reduction in direct and indirect health costs, better education, improved water supply and increases in tourism.

The percentage of the population with access to an improved drinking source (either piped water, protected well or hand pump, tanker or bottled water) increased from 48% in 2001 to 66% in 2010. While the percentage of the population with access to improved sanitation facilities (pit latrine with slab, ventilated improved pit latrine or a pour/flush septic tank or pit) was 39% in 2010. In rural areas, 57% for rural areas has access to improved drinking water and 25% have access to improved sanitation facilities based on the 2010 Census. Springs are the main water source for the rural eastern part of the country and the second main source in the rural central and western areas. For more than a third of Timorese families, access to water is ten or more minutes away. The main source of drinking water in urban areas is from household taps (42%). In rural areas, the main source of drinking water is from a well or spring (25%). Water shortages are common in many areas in the dry season.

Timor-Leste also has problems with drainage and storm water pollution in Dili and district centres. Waste and contaminants lie on the streets or in dried-up streams before being carried to the sea with the rain. In Dili during the wet season, many sections of drainage channels become blocked with solid waste, kankung and sediment, leading to flooding and dangerous levels of pollution.

Major water supply and sanitation projects have been carried out, but lack of operating and maintenance capacity has led to difficulties in sustaining them.

GoTL Strategy and Actions for Water Supply

According to the SDP (2011-2030), the strategy for improving water supply and sanitation is based on achieving the following Millennium Development Goals by 2020:

- 75% of Timor-Leste's rural population will have access to safe, reliable and sustainable water
- 40% of rural communities will have significantly improved sanitation facilities
- Installation of approximately 400 water systems for 25,000 rural households in the next five years (at 80 systems per year)
- Construction of community owned latrines
- Provision of technical expertise and supervision for communities

- Recruitment of 80 sub-district water and sanitation facilitators for sucos
- Major investment in rehabilitating and extending irrigation systems and improving water storage in rural areas.

The water supply sub-projects being implemented by this project are therefore aligned with the SDP (2011-2030) strategy to invest in the development of rural water supply systems and the provision of access to safe, reliable and sustainable water. Importantly the project is also addressing the current lack of O&M which will improve the long-term resilience of the water supply systems.

3.5.2 Policy framework for Public Water Supply

The following national policies provide guidance in water and sanitation:

(i) the National Public Water Supply Policy (2020) of the Ministry of Public Works (MPW)[4],

(ii) the MPW's National Water Resource Management (WRM) Policy (2020)[5], and

(iii) the MPW's National Basic Sanitation Policy (2012)[6].

The Public Water Supply Policy and the WRM Policy establish the responsibility for public water supply and water resources management with the government and provide clear guidance on the roles and responsibilities of BTL and the new regulatory authority for water management. The National Basic Sanitation Policy provides guidance for all ministries and stakeholders on investment in sanitation. While there has been investment in rural household sanitation, as evidenced by the improved access to sanitation figures, investment in public sanitation facilities has been limited. Investment in public sanitation facilities is critical as management of septage in urban areas is unsustainable.

The establishment of Bee Timor-Leste (BTL) and the water and sanitation regulatory authority (the National Authority for Water and Sanitation) are positive steps toward improving institutional arrangements for water supply and sanitation services delivery. However, a lack of skilled human resources remains a significant barrier to these entities becoming effective agents for improving service levels. According to the 2019 United Nations Global Status Report, Timor-Leste has less than 50% of the human resources needed to implement the country's drinking water policy.

PDIM and PNDS - Expenditure on Infrastructure

In Timor-Leste, expenditure on infrastructure is implemented through three windows, these being line ministries' Consolidated Fund of Timor-Leste (CFTL) budgets; the Infrastructure Fund; and the District Integrated Development Plan (PDID), a district development program which includes the construction of small-scale infrastructure projects with budgets of less than US$500,000. Line ministries' CFTL budgets are used to execute all projects that have budgets to a value of less than US$1 million and which are expected to be completed within a year. The Infrastructure Fund, a multi-year fund that was established in 2011, is used to execute large projects with budgets to a value in excess of US$1 million and which are expected to take more than one year to complete. The main goal of the PDID is to develop the domestic private sector, with its secondary goals being to create an increased number of employment opportunities in rural areas and to provide high quality infrastructure demanded by the local population in these areas.

[4] The National Public Water Supply Policy provides guidance on the provision of drinking water to meet the population's needs. It is written based on the establishment of the new state-owned water utility. It sets out system ownership, responsibilities for establishing tariffs for provision of service, requirements for inclusive and participatory planning for public water supply, service and design standards, and guidance on capacity development and monitoring and evaluation

[5] The National WRM Policy guides the provision of water for all other purposes. The policy provides guidance on the creation of administrative, institutional, and WRM structures and a vision of (i) adequate, reliable, and sustainable water resource access for all to meet basic needs and for use in subsistence agriculture; (ii) equitable and sustainable WRM for the benefit of all; and (iii) protection and rehabilitation of degraded water-dependent ecosystems. The policy gives priority to water for domestic consumption.

[6] The National Basic Sanitation Policy clarifies that each family and institution is responsible for the construction, use, and maintenance of its own hygienic toilets and hand-washing facilities and other sanitary facilities. The purpose of the policy is to provide guidance and define rules and responsibilities for investment in sanitation and the activities of all ministries and stakeholders in the sector.

Implementation of Rural Infrastructure

The funding and implementation of rural infrastructure is done via the Planning and Implementation of District Development Investment Plan (formerly PDID now PDIM).

The current PDIM process currently does not include climate risk considerations in the identification, prioritization, design or implementation of projects apart from those undertaken by donor-funding such as the UNDP SSRI and SCR projects which are aiming to embed climate risk considerations into the PDIM process.

3.6 UNDP Social and Environmental Standards

The project is implementing UNDP's Social and Environmental Standards Procedure. An ESMF was prepared for the overall project at proposal stage.

UNDP's Social and Environmental Standards (SES) underpin the commitment to mainstream social and environmental sustainability in our programmes and projects to support sustainable development. The SES objectives are to:

- Strengthen the quality of programming by ensuring a principled approach
- Maximize social and environmental opportunities and benefits
- Avoid adverse impacts to people and the environment
- Minimize, mitigate, and manage adverse impacts where avoidance is not possible
- Strengthen UNDP and partner capacities for managing social and environmental risks
- Ensure full and effective stakeholder engagement, including through a mechanism to respond to complaints from project-affected people.

The SES are an integral component of UNDP's quality assurance and risk management approach to programming. This includes the project-level Social and Environmental Screening Procedure (SESP). Screening and categorization of projects is one of the key requirements of the Social and Environmental Standards (SES). The key elements of UNDP's Social and Environmental Standards (SES) are shown in the figure below.

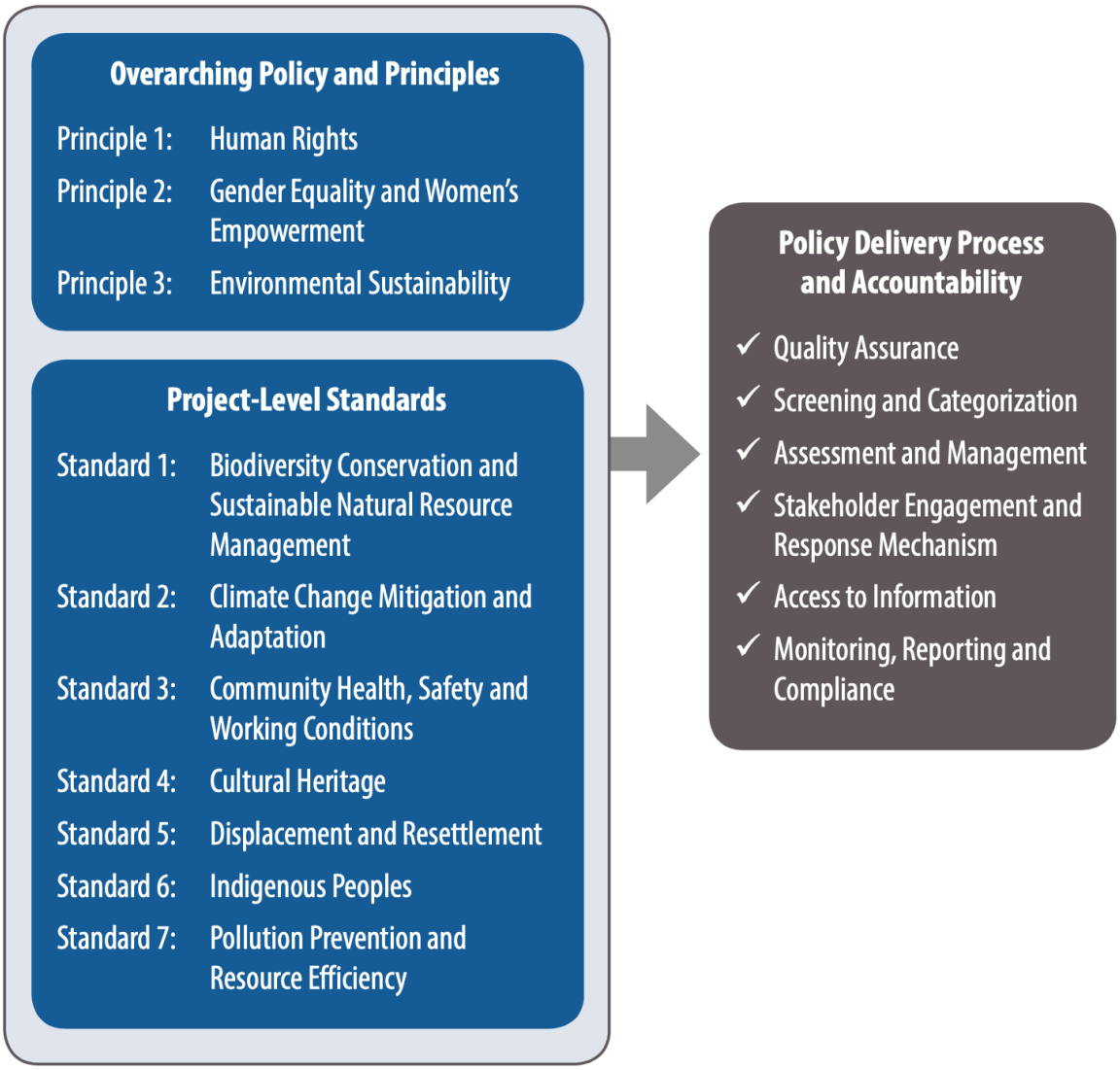


Figure 3-2: Key elements of UNDP's Social and Environmental Standards (SES), UNDP 2015[7]

The objectives of UNDP's Social and Environmental Screening Procedure (SESP) are to:

- Integrate the SES Programming Principles to maximize social and environmental opportunities and benefits and strengthen social and environmental sustainability.
- Identify potential social and environmental risks and their significance.
- Determine the project's risk category (Low, Moderate, Substantial, High); and,
- Determine the level of social and environmental assessment and management required to address potential risks and impacts.

All individual water supply schemes sub-projects are screened against UNDP's Social and Environmental Standards Procedure. The impact risk assessment is undertaken using the UNDP Social and Environmental Screening Procedure to assess the probability (expected, highly likely, moderately likely, not likely) and the impact of the risk (critical, severe, moderate, minor, negligible). From this, a significance value is attributed to the potential impact (negligible, low, medium, high and extreme). The project and all sub-projects were deemed to be moderate risk projects. Discussions on the impact

[7] https://www1.undp.org/content/dam/undp/library/corporate/Social-and-Environmental-Policies-and-Procedures/UNDPs-Social-and-Environmental-Standards-ENGLISH.pdf

assessment are provided in the Social and Environmental Screening template and UNDP's SESP which provided the rationale for the project being classified as a moderate risk.

Table 3-2: UNDP's Safeguard Standards Triggered in Water Supply System sub-projects

Project Level Standard		Applicability	Notes
PS1	Biodiversity Conservation and Sustainable Natural Resources Management	Yes	The project is not within or near to any protected area. However, there is the potential disturbance/loss of vegetation at the project site during construction works. The sub-project works involve agroforestry and soil-bioengineering activities which may use non-invasive, non-native species of trees.
PS2	Climate Change and Disaster Risks	Yes	The project will not exacerbate climate change nor increase vulnerability. However, the risk of the sub-project works being affected by extreme rainfall during construction and/or defects-liability period during the rainfall season remains.
PS3	Community Health, Safety and Working Conditions	Yes	Health and safety measures are reflected in the ESMP. Occupational Health and Safety (OHS) Management Plan established Preventing the use of child labour and forced labour The project will engage contractors which will need to ensure their labour policies and practices provide adequate safeguards against discrimination of workers and protect and promote the safety and health of workers, and are in compliance with employment and labour laws, applicable rules and regulations and international commitments. To leave no one behind by protecting and supporting workers in disadvantaged and vulnerable situations, including a special focus, as appropriate, on women workers, young workers, migrant workers and workers with disabilities as will be a focus of this project.
PS4	Cultural Heritage	Yes	Project is not within archaeological or heritage site. Unknown cultural heritage items could be discovered during construction activities, therefore a Chance Find Procedure has been developed (Annex 6). All activities are in conformance with and respect traditional and local knowledge and customs in both administrative and customary affairs
PS5	Displacement and Resettlement	No	The projects include rehabilitation of existing water supply schemes following the exiting layout without realignment, and construction of new schemes along routes agreed with the communities. All landowners have been consulted and they have no objection to the proposed work. Therefore the project will not result in displacement or resettlement to communities or households and there is no

			potential conflict associated with land tenure.
PS6	Indigenous Peoples	Yes	Indigenous Peoples Plan developed, FPIC appraisal/screening checklist applied.
PS7	Pollution Prevention and Resource Efficiency	Yes	Public nuisance during construction e.g., noise, vibration, dust, fumes. Potential contamination during construction. Pollution Prevention measures are reflected in the ESMP.

The GCF funded project "Safeguarding Rural Communities and Their Physical Assets from Climate Induced Disaster in Timor-Leste" (SRC) is one of the main climate change projects that is being implemented in Timor-Leste with duration of 6 years between the period March 2020 to March 2026.

Prior to the approval of the SRC project proposal and funding by the GCF Board, UNDP prepared an Environmental and Social Management Framework ("ESMF") which provides the guiding framework for the overall project and the respective sub-projects. The ESMF also provides the guiding framework for the preparation and implementation of the sectoral infrastructure ESMPs which form the basis for the detailed site specific ESMPs for the infrastructure sub-projects in compliance with UNDP's SES policy and procedures.

Prior to commencing any construction works or activities for the implementation of the sub-projects, UNDP shall submit, to the GCF Secretariat, the sectoral Environmental and Social Management Plan related to the relevant construction works or activities to be executed per infrastructure type. The Environmental and Social Impact Assessment (ESIA) is one of the main requirements that should be conducted to analyze whether the planned construction and/or rehabilitation works for the selected rural infrastructure projects will have any potential environment and socio-economic impacts and proposed adequate mitigative measures and interventions. Given that the GCF funds are channelled through UNDP as the AE to the GCF, UNDP must ensure the quality of its support which includes application and implementation of the SES as part of its quality assurance responsibilities.

The scope of works and the expected minor environmental and social impacts of the sub-project allow classifying the sub-project as moderate under UNDP's Social and Environmental Safeguards Standards.

The Environmental and Social Impact Assessment considers the natural environment (air, water, and land); human health and safety; and social aspects (displacement and resettlement, cultural heritage, indigenous peoples, etc.) in addition to trans-boundary and global environmental aspects.

Useful guidelines and manuals that were considered during the ESMP phase of the project include:

- UNDP Social and Environmental Safeguard Policy
- Social and Environmental Screening Procedure, UNDP 2015 and 2021
- Stakeholder Response Mechanism: Overview and Guidance, UNDP

3.6.1 SES Requirements per Standard

3.6.1.1 PS1 - Biodiversity Conservation and Sustainable Natural Resources Management

Conserving biodiversity, maintaining ecosystem services, and sustainably managing natural resources are fundamental to sustainable development. Biodiversity and healthy ecosystems strengthen our resilience to address environmental and social changes and shocks, including climate change impacts and disaster risks. UNDP seeks to maintain and enhance the goods and services provided by biodiversity and ecosystems in order to secure livelihoods, food, water and health, enhance resilience, conserve threatened species and their habitats, and increase carbon storage and sequestration.

UNDP is committed to integrating biodiversity and ecosystem management into development planning and production sector activities, strengthening protected areas systems, and managing and rehabilitating ecosystems for adaptation to and mitigation of climate change. UNDP seeks to strengthen effective governance and decision-making systems affecting biodiversity and ecosystems, including strengthening the rights of affected populations including women, indigenous peoples and local communities to sustainable use of resources.

This Standard reflects the objectives of the Convention on Biological Diversity — including the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the use of genetic resources—and other international conventions and agreements. UNDP promotes an ecosystem approach to biodiversity conservation and sustainable management of natural resources.

The key objectives set out in Standard 1 are the following:

- To conserve biodiversity and maintain ecosystems
- To maintain and enhance the benefits of ecosystem goods and services
- To promote sustainable management and use of renewable natural resources
- To ensure the fair and equitable sharing of the benefits from the utilization of genetic resources
- To respect, preserve, maintain and encourage knowledge, innovations and practices of indigenous peoples and local communities relevant for the conservation and sustainable use of biodiversity and their customary use of biological resources.

Standard 1 is focused on avoiding, and if avoidance is not possible, minimizing and mitigating potential adverse social and environmental impacts on biodiversity, ecosystems and ecosystem services associated with project-related activities. Requirements of Standard 1 address risks and impacts to biodiversity and ecosystem types, with increasing stringency depending on risk levels and biodiversity values of project areas. Biodiversity and ecosystem services are especially relevant to sectors that develop living natural resources as commodities, such as agriculture, forests, fisheries, and livestock, and Standard 1 includes requirements regarding sustainable management practices for such activities.

PS1 Summary Requirements
Requirements of Standard 1 have been considered and addressed in an integrated manner (e.g. together with risks and impacts associated with other SES Standards) during the screening process, the social and environmental assessment, and in the development and implementation of this ESMP. UNDP Social and Environmental Standards (SES) Guidance note - Standard 1: Biodiversity Conservation and Sustainable
Natural Resource Management provides as detailed discussion of the requirements for this standard. The high-level summary of Standard 1 requirements is as follows:

- ***Precautionary approach:*** Apply a precautionary approach to use, development, management of habitats, their ecosystem services, and production of living natural resources
- ***Assess risks to biodiversity and ecosystem services:*** For Moderate, Substantial and High Risk projects, assess potential direct, indirect, and cumulative impacts on biodiversity and ecosystems, including consideration of habitat loss and degradation, fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution (e.g. chemical, organic, plastics, POPs, etc.), pesticides, incidental take, potential climate change impacts and differing values attached to biodiversity and ecosystem services by affected communities. Consider impacts across landscapes/seascapes.
- ***Use of experts:*** For projects with potential adverse impacts on biodiversity and ecosystems, use qualified professionals in assessment and design of mitigation/management plans Siting preference: Locate projects with potential adverse impacts on lands already converted
- ***Mitigation hierarchy:*** Risk reduction measures to follow mitigation hierarchy that favours avoidance of potential adverse impacts over minimization, mitigation where residual

adverse impacts remain, and as a last resort, application of offset and compensation measures. Mitigation measures seek to achieve no net loss and preferably a net gain of biodiversity (net gains required for impacts on critical habitats)

- ***Habitats:***
    - ***Modified habitats:*** Minimize unwarranted conversion/degradation/fragmentation of modified habitat
    - ***Natural habitats:*** If adverse impacts on natural habitats, proceed only if no viable alternatives and appropriate conservation and mitigation measures/plans are in place that describe the conservation outcomes, implementation actions, and monitoring and evaluation arrangements (e.g. a Biodiversity Action Plan)
    - ***Critical habitats:*** No project activities to be conducted in critical habitats unless (a) there are no measurable adverse impacts on the area's biodiversity values and supporting ecological processes, (b) no reduction in Vulnerable, Endangered, or Critically Endangered species, (c) any lesser impacts are appropriately mitigated, and (d) a Biodiversity Action Plan is in place to achieve net gains of relevant biodiversity values
- ***Use of offsets***: Biodiversity offsets to be utilized only as a last resort and must be designed to achieve measurable conservation outcomes that result in no net loss and preferably a net gain in biodiversity. For impacts on critical habitats, offsets to be considered only in exceptional circumstances, with net gain in biodiversity required. "Like-for-like or better" principle and use of external experts required
- ***Illegal trade:*** Measures will be adopted to ensure that supported activities do not increase the risk of illegal trade of protected species
- ***Protected areas:*** For activities in protected areas, ensure critical habitats requirements are followed, and ensure that activities are consistent with area management plans (if exist) and area sponsors and stakeholders are appropriately consulted. Activities to enhance conservation and management of area should be incorporated into project, as appropriate
- ***Management of ecosystem services:*** Avoid adverse impacts on ecosystem services of relevance to affected communities; if avoidance is not possible, then mitigation and management measures aim to maintain their value and functionality
- ***Invasive species:*** No introduction of known invasive species. No introduction of any alien species without risk assessment. Possibility of accidental introduction of invasive alien species to be considered and managed Biosafety and genetic resources: If project involves transfer, handling and/or use of genetically modified organisms/living modified organisms (GMOs/LMOs), conduct risk assessment per Cartagena Protocol
- ***Forests:*** Ensure that project activities (a) conserve natural forests and biodiversity, avoiding conversion of natural forests; (b) incentivize protection and conservation of natural forests and their ecosystem services and other social and environmental benefits; (c) enhance sustainable management of forests (including certification of industrial logging); (d) that restoration projects maintain or enhance biodiversity and ecosystem functionality; (e) ensure plantations are environmentally appropriate, socially beneficial, economically viable, utilizing native species. Give preference to small-scale community-level forest management approaches
- ***Water resources:*** Promote integrated water resources management, avoid significantly altering flow regimes and undertake risk assessments, environmental flow analysis and management to extent feasible in context of river basin planning.
- ***Sustainable Management of Renewable Natural Resources:*** Manage living natural resources in sustainable manner, including safeguarding biodiversity and life-supporting capacity of ecosystem services. Apply industry-specific best management practices including certification systems where possible and appropriate. Adopt appropriate measures, where relevant, to promote animal welfare, control for potential invasiveness or escape of production species, and minimization of antimicrobial resistance. Support small-scale resource owners/producers to harvest/produce sustainably. Ensure fair and equitable benefit sharing in utilization of genetic resources (consistent with the Nagoya Protocol.

- ***Soil management:*** avoid, and where avoidance is not possible, minimize adverse impacts on soils, their biodiversity, organic content, productivity, structure, water-retention capacity.
- ***Primary Suppliers:*** When purchasing natural resource commodities, limit procurement to primary suppliers that can demonstrate that they are not contributing to significant conversion or degradation of natural or critical habitats and shift suppliers where they cannot. Encourage use of Environmental Product Descriptions.

3.6.1.2 PS2 Climate Change and Disaster Risks

The key climate change and disaster risk reduction objectives set out in Standard 2 are the following:

- To ensure that UNDP projects are sensitive to climate change and disaster risks in order to achieve sustainable development outcomes
- To reduce project-related greenhouse-gas (GHG) emissions and intensity (S2)

As an integral part of the social and environmental assessment process, UNDP ensures that proposed activities are screened and assessed for climate change and disaster risks and their impacts to project activities and outputs as well as the possibility that project activities could increase exposure to such risks. UNDP ensures that the status and adequacy and applicability of relevant climatic and disaster risk information is identified. If significant potential risks are identified, then further scoping and assessment of vulnerability, potential impacts, and avoidance and mitigation measures, including consideration of alternatives to reduce potential risks, will be required. mitigation co-benefits (e.g. reduction in GHG emissions) where possible and exploiting potentially beneficial changes in climatic or environmental conditions to deliver developmental benefits.

PS2 Summary Requirements

The applicability of this Standard was established during the social and environmental screening and categorization process and will be further examined during preparation of site-specific feasibility studies per project. Requirements of this Standard apply to all projects that (i) have development outcomes that may be threatened by climate change or disaster risks; (ii) may contribute to increased exposure and/or vulnerability to climate change or disaster risks; or (iii) may produce significant GHG emissions. UNDP Social and Environmental Standards (SES) Guidance note - Standard 2: Climate Change and Disaster Risks provides a detailed discussion of the requirements for this standard. The high-level summary of Standard 2 requirements is as follows:

- ***Screen Projects for Climate Change Impacts and Disaster Risks***
    - Utilize Social and Environmental Screening Procedure (SESP) to identify and categorize potential risks and impacts regarding climate change and disasters
- ***Climate Change and Disaster Risk Analysis, Planning and Implementation***
    - Evaluate risks from climate change impacts and disasters as part of project social and environmental assessment process. Where significant risks are identified, undertake additional scoping and climate change and disaster risk assessment
    - Ensure projects are sensitive to and informed by analysis of risks and impacts of climate change and hazards (both natural and human-made) through the following key measures:
        - Identify relevant and up-to-date risk information (based on existing studies and sources)
        - Examine exposure and sensitivity of relevant communities, ecosystems, and critical infrastructure.
        - Analyse physical, social, economic and environmental factors which increase susceptibility and vulnerability—with a particular focus on marginalized and disadvantaged groups and individuals
        - Examine viability or longer-term sustainability of project outcomes due to potential climate change impacts and disaster risks

        - Assess whether activities may increase exposure or exacerbate vulnerability of communities to the impacts of climate change or disasters and avoid activities that may exacerbate such exposure
        - Ensure that appropriate climate and disaster risk management plans are in place, including but not limited to emergency preparedness and response plans and ensure appropriate monitoring
        - Integrate, where relevant, climate change adaptation and disaster risk reduction considerations and seek opportunities for reducing exposure and vulnerabilities to strengthen resilience
        - Where possible, integrate disaster risk reduction measures into the recovery of infrastructure and societal systems to "build back better" after a disaster to increase the resiliency of communities.

- ***GHG Emissions***
    - Identify and seek to minimize and avoid unwarranted increases in GHG emissions or other drivers of climate change from project activities
    - Ensure options are considered to reduce or avoid project-related GHG emissions
    - For projects expected to produce significant GHG emissions, characterize (direct vs. indirect GHG emissions) and estimate and report emissions (i.e. above 25,000 tonnes CO2e/year and/or per country regulations)

- ***Infrastructure Safety and Emergency Preparedness (see Standard 3)***
    - Ensure that project-affected communities are protected from natural and human-made hazards associated with project design, construction, operation, and decommissioning (e.g. collapse of project's structural elements, impact of project-induced land use changes on vulnerability or hazards) through:
        - Applying relevant national building and safety codes and good international practice (e.g. engineering, life and fire safety, seismic codes, etc.). Ensure infrastructure is designed, constructed, operated and decommissioned by competent authorities and professionals
        - Avoiding or minimizing community exposure to water-/vector borne diseases, communicable and noncommunicable diseases that could result from project activities
        - Ensuring that projects take into account differences in risk exposure and sensitivity of women and men as well as marginalized and disadvantaged groups, including children, older persons, persons with disabilities, indigenous peoples
        - Ensuring that exposure to hazardous materials from natural hazard-triggered accidents is considered and addressed
        - Supporting appropriate emergency preparedness and response plans to accidents and emergency situations
        - Preparing business continuity plans for key infrastructure

3.6.1.3 PS3 Community Health, Safety and Working conditions

The Community Health and Safety Standard recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. Potential negative impacts affecting health and safety may arise from a broad range of supported activities, including from infrastructure development and construction activities, changes in the nature and volume of traffic and transportation, water and sanitation issues, use and management of hazardous materials and chemicals, impacts on natural resources and ecosystems, the influx of project labour, and potential abuses by security personnel. This Standard addresses the need to avoid or minimize the risks and

impacts to community health, safety and security that may arise from project-related activities, with particular attention given to disadvantaged and marginalized groups.

The pursuit of inclusive and sustainable economic growth, full and productive employment and decent work for all requires the protection of workers' fundamental rights, their fair treatment, and the provision of safe and healthy working conditions. Project activities seek to enhance employment promotion benefits, development outcomes and sustainability by ensuring sound worker-management relationships and cooperation in their design and implementation. The SES requirements have been guided by a number of international conventions and instruments, including those of the International Labour Organization (ILO) and the United Nations (UN)

The objectives of this standard are:

Community Health, Safety and Security

- To anticipate and avoid adverse impacts on the health and safety of affected communities during the project life cycle from both routine and non-routine circumstances
- To ensure quality and safety in the design and construction of project-related infrastructure, preventing and minimizing potential safety risks and accidents
- To avoid or minimize community exposure to disaster risks, diseases and hazardous materials associated with project activities
- To ensure that the safeguarding of personnel and property minimizes risks to communities and is carried out in accordance with international human rights standards and principles
- To have in place effective measures to address emergency events, whether human-made or natural hazards

Working Conditions

- To promote, respect and realize fundamental principles and rights at work through:
    - Supporting freedom of association and the effective recognition of the right to collective bargaining
    - Preventing the use of child labour and forced labour
    - Preventing discrimination and promoting equal opportunity of workers.
- To protect and promote the safety and health of workers.
- To ensure applicable parties comply with employment and labour laws, applicable rules and regulations and international commitments.
- To leave no one behind by protecting and supporting workers in disadvantaged and vulnerable situations, including a special focus, as appropriate, on women workers, young workers, migrant workers and workers with disabilities.

PS3 Summary Requirements – Community Health, Safety and Security

UNDP Social and Environmental Standards (SES) Guidance notes - Standard 3: Community Health, Safety and Security and Labour and Working Conditions provide a detailed discussion of the requirements for this standard. The high-level summary of Standard 2 requirements is as follows:

- Adopt measures to avoid and minimize ***community exposure to health risks*** (e.g. pollution, contaminated areas/resources) and diseases that could result from or be exacerbated by programming activities, including water-related3 and vector-borne diseases, and communicable and noncommunicable diseases, injuries, nutritional disorders, mental health and well-being that could result from project activities, taking into consideration the differentiated exposure to and higher sensitivity of marginalized groups, including communities living in voluntary isolation (S3, 6).
- Where ***endemic diseases*** exist in project areas (e.g. malaria), explore ways to improve environmental conditions that could minimize the incidence of such diseases (S3, 6).

- Where projects involve the provision of health services and/or use of antibiotics, incorporate ***antimicrobial stewardship*** (S3, 6).
- ***Infrastructure design and safety:*** Ensure structural elements and services are designed, constructed, operated and decommissioned in accordance with national legal requirements, good international practice, and any relevant international obligations and standards by competent professionals and certified or approved by competent authorities or professionals (i.e. by qualified engineers and professionals; independent certification and approval; appropriate plans for supervision, quality assurance, operation and maintenance, and emergency preparedness; periodic safety inspections and monitoring (S3, 7).
- Ensure ***construction site safety***, including appropriate control of access (e.g. fencing, security), use of appropriate personal protective equipment, safely designed work platforms, appropriate engineering and administrative controls (e.g. detours, traffic calming, signs), and safety barriers (S3, 7).
- Where relevant, potential ***traffic and road safety***[8] risks associated with project activities will be identified, evaluated and monitored (S3, 8).
- Wherever feasible, ensure that the concept of ***universal access***[9] is applied in the design and construction of facilities and services open to or provided to the public on an equal basis with others (S3, 9).
- Where avoidance is not possible, minimize potential community exposure to ***hazardous materials and substances*** that may be utilized in or released by project activities (including use, storage, handling, transport, disposal). Consider the need for Hazardous Materials Management Plan (S3, 10).
- Ensure that the implementing partner, in collaboration with appropriate and relevant authorities and third parties, is prepared to respond to accidental and ***emergency situations*** in a manner appropriate to prevent and mitigate any harm to people and/or the environment in the context of project activities and areas. Consider the need for Emergency Response Plans (S3, 11).
- Ensure that appropriate measures are taken, including by project contractors, to avoid, mitigate and manage the risks and potential adverse impacts on health and safety of communities arising from the ***influx of project-related workers*** into project areas (e.g. transmission of communicable diseases, sexual violence and harassment, crime and public safety, environmental impacts and pressure on limited resources. Consider need for labour influx management plan and codes of conduct (S3, 12).
- Where project activities may adversely impact ***ecosystem services*** despite avoidance and minimization measures, adopt appropriate mitigation measures that aim to maintain the value and functionality of ecosystem services of relevance to local communities, paying special attention to avoid causing or exacerbating potential adverse impacts on marginalized and disadvantaged groups (S3,13).
- Ensure that potential risks posed by ***security arrangements*** to those within and outside the project area have been assessed and that those providing security are appropriately vetted, trained and supervised, and that security arrangements are appropriately monitored and reported (S3, 14).

[8] Note that the implementing partner needs to promptly notify UNDP and stakeholders of any incident or accident related to the project activities that has had (or is likely to have) significant adverse impacts on people or the environment. Immediate measures are to be undertaken by the responsible partner to address and remedy the incident or accident, and to prevent any recurrence. See SES Guidance Note on E&S Assessment and Management (Section 5.3) and UNDP Construction Works Policy (paras. 85-86).

[9] Note that UNDP's Construction Works Policy further requires that newly constructed Works, structural additions, or major renovations must be planned, designed and constructed so as to be accessible to persons with disabilities, including incorporating building codes that meet international and local standards for universal access, wherever possible (para. 31). In addition, necessary supporting provisions are to be incorporated in the design and procurement of Works (para. 32) and newly constructed Works must be planned, designed and constructed to be gender responsive to the different needs and constraints of women and men. The design must remove barriers to access and the use of Works and related services by women, as well as enhance women's safe access and use.

PS3 Summary Requirements – Working Conditions

- ***Terms and Conditions of employment*** - There is a range of requirements regarding the terms and conditions of employment for project workers, including but not limited to the following:
    - Written labour management procedures are established that set out the conditions in which project workers will be employed or engaged and managed, in accordance with the requirements herein and applicable labour laws, rules and regulations. The procedures are appropriate to the size, locations and workforce of project activities.
    - Project workers are provided information and documentation that is clear and understandable regarding their terms and conditions of employment, including information that sets out their rights under applicable labour laws, rules and regulations (including any applicable collective agreements), and their rights related to hours of work, wages, overtime, compensation and benefits, occupational safety and health and the requirements herein. This information and documentation is provided at the beginning of the working relationship and when any material changes to the terms or conditions of employment or engagement occur.
    - Project workers are paid on a regular basis as required by applicable labour laws, rules and regulations. Deductions from payment of wages are only made as allowed by human resources management policies and applicable labour laws, rules and regulations. Project workers are informed of the conditions under which such deductions will be made. Project workers are provided with adequate periods of rest per week, annual holiday and sick, maternity and family leave, as required by applicable labour laws, rules and regulations.
    - Project workers receive written notice of termination of employment and details of severance payments in a timely manner as required by applicable labour laws, rules and regulations. All wages that have been earned, social security benefits, pension contributions and any other entitlements are paid, either directly to the project workers or, where appropriate, for the benefit of the project workers, with evidence of such payment.
- ***Non-discrimination and equal opportunity***
    - Decisions relating to the employment or treatment of project workers are not made on the basis of personal characteristics unrelated to inherent job requirements. The employment of project workers is based on the principle of equality of opportunity and treatment, and there shall be no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, or disciplinary practices. Women and men shall receive equal remuneration for work of equal value. The labour management procedures shall set out measures to prevent and address violence, harassment, intimidation and/or exploitation. Where applicable labour laws, rules and regulations are inconsistent with this paragraph, activities are carried out in a manner that is consistent with these requirements to the extent possible.
    - Neither special measures of protection and assistance to remedy discrimination nor selection for a particular job based on the inherent requirements of the job are not deemed as discrimination.
    - Appropriate measures of protection and assistance are provided to address the vulnerabilities of project workers, including specific groups of workers, such as women, persons with disabilities, migrant workers and young workers.
    - Appropriate measures will be taken to prevent and address any form of violence and harassment, bullying, intimidation and/or exploitation, including any form of gender-based violence (GBV).
- ***Workers organizations:*** In countries where national law recognizes workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference, the applicable parties subject to national law who have engaged project

workers must comply. In such circumstances, the role of legally established workers' organizations and legitimate workers' representatives is respected and they will be provided with information needed for meaningful negotiation in a timely manner. Where national law restricts workers' organizations, the applicable parties subject to national law shall not restrict project workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment and shall not seek to influence or control these alternative mechanisms. The applicable parties shall not discriminate or retaliate against project workers who participate, or seek to participate, in such workers' organizations and collective bargaining or alternative mechanisms.

- ***Forced labour:*** Forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty, shall not be used in connection with the project. This prohibition covers any kind of involuntary or compulsory labour, such as indentured labour, bonded labour, or similar labour-contracting arrangements. No trafficked persons may be employed in connection with the project activities. Where cases of forced labour are identified, immediate steps must be taken by the applicable parties to correct and remedy them.
- **Child labour:** Child labour, which consists of employment of children below the minimum age of employment as defined by the ILO Minimum Age Convention, 1973 (No. 138) and ILO Worst Forms of Child Labour Convention, 1999 (No. 182), may not be used in connection with or arising from the project activities.
    - A minimum age for employment shall be specified in connection with the project activities, as determined by national law for applicable parties subject to national law and consistent with the ILO Convention No. 138.15
    - Notwithstanding the above, a child under the age of 18 may not perform work in connection with or arising from the project activities which, by its nature or the circumstances in which it is carried out, is likely to harm his/her health, safety or morals. Such work is determined by national laws or regulations or by the competent authority and commonly specified in national lists of hazardous work prohibited to children. In the absence of such regulations, guidance on hazardous work to be prohibited in connection with the project should derive from the relevant ILO instruments. In addition, a child under the age of 18 may not, in connection with project activities, perform work that is likely to interfere with his/her compulsory education or be harmful to his/her physical, mental, spiritual, moral or social development.
    - Where cases of child labour are identified, immediate steps shall be taken by applicable parties to correct and remedy them, including the rehabilitation and social integration of the child where necessary.

Occupational safety and health (OSH): Necessary processes and measures that address the safety and health of project workers shall be in place to support project design, planning and implementation. These processes and measures may be encompassed and implemented through the applicable party's occupational safety and health management system or processes and shall address:

- Identification and assessment of potential hazards and risks, particularly those that could result in serious injury, ill health or death and those identified through worker health surveillance;
- Elimination of hazards and minimization of risks through implementation of preventive and protective measures in the following order of priority: elimination or substitution, engineering and organizational controls, administrative controls, and where residual hazards and risks cannot be controlled through these collective measures, provision of personal protective equipment at no cost to the worker;
- Safety and health training, including on the proper use and maintenance of personal protective equipment, at no cost to workers conducted by competent persons and the maintenance of training records;
- Recording and notification of occupational accidents and incidents and any resulting injuries, ill health or death;

- Emergency prevention and preparedness and response arrangements to emergency situations; and
- Employment injury benefits and/or remedies for adverse impacts such as occupational injuries, disability, ill health or disease and death

Workplace grievance mechanism:

- A workplace grievance mechanism (distinct from any general project-level grievance mechanism) is provided for all project workers (and, where relevant, their organizations) to raise workplace concerns (including potential violations of existing rights and entitlements as provided for in legislation, collective agreements, employment contracts and human resources policies). The mechanism will be easily accessible to project workers who are to be informed of the grievance mechanism at the time of recruitment and the measures to protect them against any reprisal for its use.
- The grievance mechanism shall be designed to address workers' concerns promptly, using an understandable, transparent process that provides timely feedback to those concerned in a language they understand, without any retribution, and shall operate in an independent and objective manner. The grievance mechanism may utilize existing grievance mechanisms, providing that they meet the above criteria. Existing grievance mechanisms may be supplemented as needed with project-specific arrangements.
- The grievance mechanism shall not impede access to other judicial or administrative remedies that might be available under applicable laws, regulations or rules or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements, if applicable. The mechanism ensures workers' rights to be present and to participate directly in the proceedings and to be represented by a trade union, if applicable, or person of their choosing.

Contractor/Third Party Workers:

- Due diligence is conducted to ascertain that third parties who engage project workers are legitimate and reliable entities and have in place appropriate policies, processes and systems that allow them to operate in accordance with the minimum requirements herein.
- Procedures are established for managing and monitoring the performance of such third parties in relation to the minimum requirements herein, including incorporation of the minimum requirements into contractual agreements with such third parties, together with appropriate noncompliance remedies. In the case of subcontracting, third parties are required to include equivalent requirements and remedies in their contractual agreements with subcontractors.
- Contractor workers shall have access to a grievance mechanism. Where the third party employing or engaging the workers is not able to provide an easily accessible grievance mechanism, the grievance mechanism provided to direct project workers shall be made available.

Primary Supplier Workers:

- Potential risks of violations of primary supplier workers' fundamental rights and safety and health issues which may arise in relation to primary suppliers (at a minimum) are to be identified. Roles and responsibilities for monitoring primary suppliers are established. If child labour or forced labour cases or breaches of other fundamental rights are identified, the applicable party will require the primary supplier to take appropriate steps to remedy them.
- Additionally, where primary supplier workers are exposed to hazards that present a risk of serious injury, ill health or death, the relevant primary supplier is required to have procedures in place to address such safety and health issues. Such procedures and mitigation measures shall be reviewed periodically to ascertain their effectiveness.
- The ability to address these risks shall depend upon the applicable party's level of control or influence over its primary suppliers. Where prevention and remedy are not possible, shift the project's primary suppliers to suppliers that can demonstrate that they are meeting the relevant requirements herein. Where there is imminent danger of serious injury, ill health

or death to workers, the applicable party shall exercise its control or influence to stop the operation concerned until such time as the primary supplier can demonstrate that it can control the hazard in a manner consistent with the minimum requirements herein.

3.6.1.4 PS4 Cultural Heritage

UNDP recognizes that Cultural Heritage is central to individual and collective identity and memory, providing continuity between the past, present and future. Cultural Heritage reflects and expresses people's constantly evolving values, beliefs, knowledge, traditions and practices. Cultural Heritage also serves a crucial role within the sustainable development process through enhancing social cohesion, diversity, well-being and the quality of life; supporting cultural rights by protecting the heritage of minority and indigenous groups; fostering socio-economic regeneration; enhancing the appeal and creativity of cities and regions; boosting long-term tourism benefits; and enhancing sustainable practices. Cultural Heritage resources are often unique and irreplaceable, and may be particularly fragile due to neglect, exploitation, or even destruction given their symbolism.

PS4 Summary requirements
Requirements for PS4 include but are not limited to the following:

- ***Avoidance, assessment and mitigation of adverse impacts:*** UNDP projects seek to avoid supporting activities that may lead to significant adverse impacts to Cultural Heritage. UNDP considers potential direct, indirect, irreversible and cumulative risks and impacts to Cultural Heritage from project activities. Relevant projects implement globally recognized practices for field-study, inventorying, documentation, and protection of Cultural Heritage, including where appropriate a Heritage Impact Assessment.[4] Where avoidance is not possible—ensuring that all viable and feasible alternatives have been explored—UNDP minimizes potential impacts per the mitigation hierarchy and adopts appropriate mitigation measures (e.g. relocating or modifying the footprint of supported activities, in situ conservation and rehabilitation). Where potential adverse impacts may be significant, a Cultural Heritage Management Plan should be developed as part of the overall Environmental and Social Management Plan (ESMP). The impacts on Cultural Heritage resulting from project activities, including mitigating measures, may not contravene the country's national legislation, or its obligations under relevant international treaties and agreements
- Ensure ***chance find procedures*** are included in plans and contracts regarding project-related construction which specify how unanticipated discoveries will be managed. A chance finds procedure is not a substitute for preconstruction surveys and analyses. UNDP projects ensure that chance find procedures are included in all plans and contracts regarding project-related construction, including excavations, demolitions, movement of earth, flooding, or other changes in the physical environment; such procedures establish how chance finds of tangible Cultural Heritage shall be managed, including notification of relevant authorities and stakeholders, avoidance of further disturbance or damage, protection, documentation and assessment of found objects by relevant experts.
- ***Community participation, stakeholder consultations and use of experts:*** For projects with potential adverse impacts, qualified and experienced Cultural Heritage experts and relevant stakeholders assist in the identification, documentation and appropriate management (e.g. protection) of potentially affected Cultural Heritage. Ensure meaningful, effective stakeholder consultations are undertaken, including with local and national regulatory authorities entrusted with the protection of Cultural Heritage; local, national or international Cultural Heritage experts and organizations; and affected-parties, including individuals and communities who develop, have developed, use or have used the potentially affected Cultural Heritage within living memory. Where the Cultural Heritage of indigenous peoples may be affected by project activities, ensure that the requirements of the Standard 6: Indigenous Peoples are followed.
- ***Avoid restricting access*** to Cultural Heritage; where this is not possible, ensure continued access, subject to overriding safety and security considerations. For example, if construction blocks a path to a worship site, a different access route and/or specified access times should be incorporated (S4, 10). UNDP projects avoid restricting access to Cultural Heritage sites and to the instruments, objects, artefacts, cultural and natural

spaces and places of memory necessary for expressing intangible Cultural Heritage. However, where this is not possible, projects ensure continued access based on stakeholder consultations and alternative routes are provided if access is blocked, subject to overriding safety and security considerations.

- ***Withhold sensitive information*** regarding Cultural Heritage if disclosure would compromise or jeopardize its safety or integrity or endanger sources of information. If project-affected communities hold the location, characteristics or traditional use of Cultural Heritage in secret, then support measures to maintain confidentiality and to respect customary practices (e.g. may require withholding from project documentation maps identifying sensitive areas or information that would reveal the location or nature of the Cultural Heritage or the identity of the stakeholder (S4, 11). Together with stakeholders UNDP projects determine whether disclosure of information regarding Cultural Heritage would compromise or jeopardize its safety or integrity or endanger sources of information. In such cases, sensitive information may be withheld from public disclosure. If communities affected by project activities hold the location, characteristics or traditional use of Cultural Heritage in secret, then the project will support measures to maintain confidentiality and to respect customary practices of communities that limit access to specific aspects of their Cultural Heritage.
- Where a project proposes to ***integrate and/or utilize*** Cultural Heritage (tangible and intangible), engage in meaningful consultations and inform affected communities of their rights, the scope and nature of the proposed development, and the potential consequences of such integration and utilization (S4, 12).
- At times projects may seek to facilitate ***commercial activities*** involving Cultural Heritage. Examples of commercial use of tangible Cultural Heritage may include tourism projects that bring tourists to visit sites such as castles, churches, and temples. Commercial use of intangible Cultural Heritage may include use of traditional medicinal knowledge or other sacred or traditional techniques for processing plants, fibers, or metals. In such cases, the activities will not proceed without meaningful, effective participation of affected communities and unless good faith negotiations with affected communities result in a documented outcome that provides for fair and equitable sharing of benefits from such commercial use and appropriate mitigation and safeguarding measures (S4, 13).
- Where projects involve or affect ***intangible Cultural Heritage***, ensure meaningful participation of concerned parties in identifying risks and impacts to their intangible Cultural Heritage—including its decontextualization, commodification and misrepresentation—and in determining appropriate mitigation and safeguarding measures (including identification, inventorying, documentation, research, preservation, protection, promotion, enhancement, transmission, and revitalization of the various aspects of such heritage) (S4, 14).
- Avoid adverse impacts to ***legally protected Cultural Heritage***[10] areas; comply with national or local Cultural Heritage regulations and area management plans; consult area sponsors and managers, local communities, local and national heritage authorities and other key stakeholders; and implement additional programs, as appropriate, to enhance conservation aims of those areas (S4, 15).
- Where there is evidence or high probability of past human activity in the project area, undertake desk-based research and field surveys to document, map and investigate ***archaeological sites and materials*** and provide documentation to Cultural Heritage authorities and, with guidance on due obligations, to relevant authorities undertaking project activities. Key requirements include the following (S4, 16):
    - Determine with Cultural Heritage experts whether discovered material requires (a) documentation only, (b) excavation and documentation, or (c) conservation in place (most archaeological features are best protected by preservation in situ).

[10] It is important to consider national legislation, regulations, and practices relating to the identification and management of Cultural Heritage, and any registers or lists of Cultural Heritage that are protected, including dedicated World Heritage sites. In some countries, registers are compiled and maintained at different levels of government—national, subnational, and local—with specific legal and administrative provisions.

- Any transfer of the Cultural Heritage to another location is to be conducted in consultation with and agreement of project-affected people and appropriate national partners, per good international practice.
- Determine ownership and custodial responsibility for discovered material and until custody is transferred, ensure identification, conservation, labeling, secure storage and accessibility for study and analysis.

- Include appropriate mitigation measures for potential impacts on ***built heritage*** (noting that most built heritage features are best protected by preservation in situ). Ensure any transfer of Cultural Heritage to another location is conducted in consultation with and agreement of project-affected people, in accordance with good international practice. Ensure any rehabilitation maintains authenticity of form, construction materials and techniques of structures (S4, 17).
- Preserve physical and visual integrity of ***landscapes and natural features***[11] with cultural significance. Examples include sacred hills, mountains, landscapes, streams, rivers, waterfalls, caves, and rocks; sacred trees or plants, groves and forests; carvings or paintings on exposed rock faces or in caves; and paleontological deposits of early human, animal, or fossilized remains. The significance of such heritage may be localized in small community groups or minority populations (S4, 18).
- Include measures to guard against the theft and illegal trafficking of moveable Cultural Heritage (e.g. books, paintings, sculptures, costumes, jewellery) (S4, 19).

3.6.1.5 PS5 Displacement and resettlement

The objective of Standard 5 is to ensure that UNDP does not support forced evictions, seeks to avoid other physical and economic displacement, and supports such displacement only in exceptional circumstances and in a manner consistent with national and international standards and informed risk management.

More specifically, objectives listed in Standard 5 include:

- To recognize and respect the prohibition on forced evictions
- To anticipate and avoid, or, when avoidance is not possible, minimize adverse social and economic impacts from land or resource acquisition or restrictions on land or resource use
- To enhance and restore the livelihoods of all displaced persons, and to improve the standards of living and overall socioeconomic status of displaced poor and other displaced groups and to support efforts to progressively realize the rights to adequate housing and adequate standards of living for displaced populations
- To ensure that resettlement activities are planned and implemented collaboratively with the meaningful and informed participation of those affected

The applicability of this Standard is established during the social and environmental screening and categorization process. It applies to all UNDP activities that may involve physical displacement (i.e. relocation or loss of shelter), whether full or partial and permanent or temporary, or economic and occupational displacement (i.e. loss of assets or access to assets that leads to loss of income sources or means of livelihood) as a result of project-related land or resource acquisition or restrictions on land use or access to resources (including through project externalities such as pollution and impacts to biodiversity or ecosystem services) that people depend on for physical, economic, social, cultural, or spiritual well-being.

This Standard also applies to displacement activities occurring for associated facilities, displacement activities significantly related to the project, and displacement activities that have occurred in anticipation of a UNDP project.

[11] Note that such landscapes and natural features often can only be protected by preservation in situ. In cases where natural features can physically be relocated and cannot be preserved in situ, their transfer to another location is conducted with participation and agreement of project-affected people that enables continuation of traditional practices associated with landscape elements and natural features.

The Standard does not apply to voluntary, legally recorded market transactions in which the seller is fully informed about available choices and has the genuine right to retain the land and refuse to sell it.2 However, if the sale may displace people other than the seller, who occupy, use, or claim rights to the land in question, then these requirements shall apply. The Standard also does not apply to restrictions of access to natural resources under community-based natural resource management arrangements (e.g. the establishment of a community conserved area) where the relevant community decides to restrict its own access to these resources based on an appropriate community-decision making process that reflects voluntary, informed consensus.

For displacement and resettlement activities that may impact indigenous peoples, Standard 6: Indigenous Peoples shall also apply. This Standard shall be interpreted in a manner to be consistent with Standard 6.

PS5 Summary Requirements
Prohibit forced evictions, allowing evictions in exceptional circumstances only: Prohibit forced evictions in all supported activities. Forced eviction is defined here as the permanent or temporary removal against their will of individuals, families or communities from the homes and/or land which they occupy, without the provision of, and access to, appropriate forms of legal or other protection. Forced evictions constitute gross violations of a range of internationally recognized human rights.3 Any evictions that may be associated with project activities shall occur only in exceptional circumstances and be carried out lawfully with full justification and meet all of the following criteria: authorized by national law; carried out in full accordance with relevant provisions of international human rights and humanitarian law; (c) undertaken solely for the purpose of promoting the general welfare; (d) are reasonable and proportional, and (e) follow due process standards and are regulated so as to ensure full and fair compensation and rehabilitation. The protection provided by the requirements herein applies to all affected persons and groups, irrespective of whether they hold title to home and property under domestic law.

Avoid, minimize and mitigate physical and economic displacement: UNDP projects seek to avoid physical and economic displacement, and minimize and mitigate displacement impacts and inherent risks when displacement cannot be avoided. To this end, projects that may involve displacement[4] include the following measures and others identified as necessary:

- As part of the social and environmental assessment, consider all feasible project alternatives and measures to avoid displacement. Where a comprehensive options assessment, including the "no action" option, indicates that displacement is unavoidable, minimize its potential scale and demonstrate that any project-related land acquisition and/or restrictions on land use are limited to direct project requirements.
- Where displacement cannot be avoided, utilize experienced professionals in establishing baseline information, designing displacement activities and assessing potential risks and impacts. Identify potentially affected persons, lands, and assets through census, socio-economic surveys and evaluations, and asset inventories, including claims of affected groups not present as part of census (e.g. seasonal resource users). Clarify the tenure rights and relationships of potentially affected persons to affected lands and resources, including recognition of customary rights and collective or communal forms of land tenure.
- Where potential displacement may be significant undertake an Environmental and Social Impact Assessment (ESIA) to assess potential environmental and social impacts of the proposed land acquisition and/or restrictions on land and/or resource use and potential impacts on host communities. Pay particular attention to the needs of directly-affected persons who are marginalized and disadvantaged. Risks posed by natural and human-made hazards should be considered and minimized in the selection of any potential resettlement sites or alternative livelihood areas. Where potential displacement may be minimal, an ESIA may not be required and negotiated settlements may be reached that provide fair and just compensation for lost assets in accordance with the requirements herein.
- Public dissemination in accessible form and language of a written justification for the displacement activity and public disclosure of an action plan (e.g. Resettlement Action Plan, Livelihood Action Plan) sufficiently in advance of displacement activities.[5]
- Access to effective remedies and to timely and affordable expertise, including legal counsel, to provide an understanding of rights and options.
- Effective and informed consultations with affected populations and good faith efforts to secure negotiated settlements, even when expropriation options are available.
- Ex-post evaluation of livelihood levels to examine if objectives of this Standard were met.

Develop plans for displacement: When physical displacement or economic displacement is unavoidable, UNDP integrates into the project documentation an action plan that has been developed transparently with the individuals and communities to be displaced, and meets the objectives and requirements of this Standard.

- Action plans to address displacement impacts are proportionate to the risks and impacts associated with project activities. The degree of potential impacts is largely determined by the scope of physical and economic displacement and the vulnerability of affected persons.
- A Resettlement Action Plan will typically be developed for physical displacement and a Livelihood Action Plan for economic displacement (noting that a combined plan may also be required). Displacement activities may also at times be conceptualized as a community development plan. Where the specific locations and magnitude of potential land acquisition and restrictions of land use are not fully known during preparation of project activities, a Resettlement or and/or Livelihood planning framework is required that specifies how further specific action plans will be developed once project components are defined and assessed. In all cases, action plans addressing project-related displacement impacts are to address the requirements of this Standard.
- Where impacts on the entire displaced population are minor, an abbreviated action plan may be developed that establishes eligibility criteria for affected persons; compensation procedures and standards at full replacement cost designed at a minimum to restore affected persons assets and livelihoods; and arrangement for participation and collaboration of affected persons. Impacts are considered "minor" if affected persons are not physically displaced, are relatively few in number, and if activities involve minor land acquisition (affecting less than 10 percent of productive assets) and do not have significant livelihood impacts.
- Action plans for activities involving physical displacement or economic displacement with significant social and economic impacts on affected persons are to provide sufficient resources and opportunities to enable displaced persons to benefit directly from programming activities with the aim to improve affected persons livelihoods and living standards in real terms compared to pre-displacement levels or to levels prevailing prior to the start of implementation, whichever is higher. Such plans will at a minimum address the following relevant elements, taking into account the full social and economic costs to displaced persons:
    - Establish eligibility criteria, cutoff dates, and entitlements for all categories of affected persons;
    - Provide (a) fair and just compensation at full replacement cost (based where relevant on the cost of replacement at resettled sites and locations) prior to displacement for any losses of personal, real or other property or goods, noting that compensation and support may be collective in nature; (b) transitional support (both financial and in-kind) based on reasonable estimates of the time required to restore and improve income-earning capacity, production levels, and standards of living; and (c) development assistance such as land development, credit facilities, direct benefits, training or employment opportunities, and provision of expertise, as appropriate. The combination of compensation, transitional support and development assistance will seek to improve pre-displacement productive capacity and earning potential of displaced persons;
    - Provide to displaced individuals and communities secure access to necessary services, shelter, food, water, energy, and sanitation, as applicable;
    - Consider gender aspects, recognizing women and men as co-beneficiaries and providing single women with their own compensation; and
    - Ensure impoverished individuals and marginalized or disadvantaged persons and groups are provided equal access to programming benefits and resources.

Physical displacement: Where project activities involve physical displacement, the action plan shall address the following additional elements:

- Specify the resettlement options chosen by displaced persons, respecting preferences to relocate in pre-existing communities wherever possible, and document all transactions;
- Provide a choice of replacement property with secure tenure6 of higher value and better characteristics wherever possible7 for affected persons or communities with formal land rights or recognizable claims.8 Land-based resettlement strategies are utilized when affected livelihoods are land-based or where land is collectively owned;9

- Ensure resettlement sites provide adequate housing with improved living conditions, necessary civic infrastructure and services. For housing to be adequate, it must, at a minimum, meet the following criteria: providing security of tenure; availability of services, materials, facilities and infrastructure; affordability; habitability; accessibility; location; and cultural adequacy;10
- For affected persons without formal land rights or recognizable claims, compensate for loss of assets other than land (e.g. dwellings, other improvements) at full replacement costs, provide resettlement assistance in lieu of compensation for land sufficient to restore living standards at an adequate alternative site, and provide arrangements to allow them to obtain adequate housing with security of tenure so they can resettle without facing the risk of forced eviction;
- Stipulate that compensation is not required for encroachers after the established cut-off date, provided that the date has been well publicized.

Economic displacement: Where project activities involve economic displacement with significant social and economic impacts, the action plan shall address the following additional elements:

- Access to effective remedies and to timely and affordable expertise, including legal counsel, to provide an understanding of rights and options.
- Ensure compensation covers all commercial losses (including costs of transfer and re-establishing commercial activity, lost net income during transition, lost employee wages) and for other assets such as crops, irrigation infrastructure or other improvements to affected areas;
- Provide replacement property of improved value where legitimate tenure rights (both formal and informal) are restricted. Provide replacement agricultural sites of superior productive potential wherever possible, including through investments in increasing productivity. If it is clearly demonstrated that replacement land and resources are unavailable, offer cash compensation at full replacement cost and options and support for alternative income earning with evidence of mutual agreement;
- Compensate economically displaced persons who are without legally recognizable claims to land for lost assets other than land (e.g. crops, irrigation infrastructure, other improvements made to the land), at full replacement cost;
- Where displaced livelihoods are natural resource based, offer replacement land and access to alternative resources with a combination of productive potential, locational advantage, and other factors with improved livelihood-earning potential and accessibility, wherever feasible. Provide alternative income earning opportunities and support if it is demonstrably not possible to provide replacement land and resources;
- If the programming activities restrict access to resources in legally designated parks or protected areas or other common property resources, establish a collaborative process with affected persons and communities to negotiate and determine appropriate restrictions and mitigation measures to improve affected livelihoods while maintaining the sustainability of the park or protected area.

Addressing prior displacement: When displacement has occurred in anticipation of a UNDP project, requirements of this Standard apply. When an unoccupied site from which prior residents were displaced is provided for a project, but not in anticipation of a project, UNDP shall determine if requirements of this Standard were met and, if not, if corrective action is feasible. If corrective action is feasible and would improve the standard of living of the displaced persons, UNDP ensures that corrective measures are pursued prior to, or if not feasible, then during implementation of the project.

Monitoring and completion analysis: UNDP projects with significant displacement impacts provide for independent monitoring by qualified experts of implementation of any action plans. Directly-affected persons are consulted on implementation of plans and collaborative monitoring with affected persons and communities is considered. Projects with significant displacement impacts prepare periodic monitoring reports and inform affected persons about monitoring results. A long-term monitoring plan is developed to assess impacts on standards of living of displaced persons and whether objectives of action plans have been achieved, taking into account baseline conditions. Project activities involving displacement are not considered complete until adverse impacts are addressed and plans are fully implemented. Utilizing experienced independent experts, undertake a completion analysis of whether livelihoods and living standards of affected persons were improved or at least restored, and where necessary, propose corrective actions.

3.6.1.6 PS6 Indigenous Peoples

Indigenous peoples, as distinct people, are equal to all other peoples. Indigenous individuals and indigenous peoples or communities are entitled to enjoy and exercise their human rights without discrimination. Indigenous peoples possess collective human rights which are indispensable for their existence, well-being and development as peoples. The special relationship that indigenous peoples have with their lands, territories, resources, and Cultural Heritage is integral to their physical, spiritual and cultural survival.

The promotion and protection of the rights of indigenous peoples, especially concerning their lands, territories, resources, traditional livelihoods, tangible and intangible Cultural Heritage, are necessary to achieve UNDP's goals of advancing human rights, respecting indigenous peoples identities and improving their well-being.

The objectives of Standard 6 are:

- To recognize and foster full respect for indigenous peoples' human rights as recognized under Applicable Law, including but not limited to their rights to self-determination, their lands, resources and territories, traditional livelihoods and cultures.
- To support countries in their promotion and protection of indigenous peoples' rights, through implementation of domestic laws, policies, and project activities consistent with the State's human rights obligations.
- To ensure that UNDP projects that may impact indigenous peoples are designed in a spirit of partnership with them, with their full and effective participation, with the objective of securing their free, prior, and informed consent (FPIC) where their rights, lands, territories, resources, traditional livelihoods may be affected.
- To promote greater control and management by indigenous peoples over developments affecting them, including their lands, resources and territories, ensuring alignment of projects with indigenous peoples' distinct vision and self-identified development priorities.
- To avoid adverse impacts on the rights of indigenous peoples, their lands, territories, resources, to mitigate and remedy residual impacts, and to ensure provision of just and equitable benefits and opportunities for indigenous peoples in a culturally appropriate manner.

PS6 Summary of Requirements

- ***Respect for domestic and international law:*** Ensure respect for domestic and international law regarding rights of indigenous peoples. Do not participate in a project that violates the human rights of indigenous peoples as affirmed by Applicable Law and the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) (Para. 4)
- ***Identification of indigenous peoples:*** Identify indigenous peoples who may be affected by project activities utilizing range of criteria (Para. 5). There is no one universally accepted definition of indigenous peoples. For purposes of this Standard, "indigenous peoples" refers to distinct collectives, regardless of the local, national and regional terms applied to them, who satisfy any of the more commonly accepted definitions of indigenous peoples. These definitions include, among other factors, consideration of whether the collective: has pursued its own concept and way of human development in a given socio-economic, political and historical context; has tried to maintain its distinct group identity, languages, traditional beliefs, customs, laws and institutions, worldviews and ways of life; has exercised control and management of the lands, territories and natural resources that it has historically used and occupied, with which it has a special connection, and upon which its physical and cultural survival as indigenous peoples typically depends; self-identifies as indigenous peoples; and/or pre-dates those who colonized the lands within which the collective was originally found or of which it was then dispossessed. When considering the factors above, no single one shall be dispositive. Indigenous peoples include those indigenous peoples who have lost access to lands, territories or resources because of forced severance, conflict, government resettlement, dispossession, natural disasters, or incorporation of lands into urban areas, but that still maintain collective attachment to those lands, territories and/or resources (regardless of their present physical location).
- ***Land, territory and resources:*** Recognize collective rights of indigenous peoples to lands, territories and resources. Include measures to promote such recognition when necessary

for project activities (Para. 6). UNDP projects recognize that indigenous peoples have collective rights to own, use, and develop and control the lands, resources and territories that they have traditionally owned, occupied or otherwise used or acquired, including lands and territories for which they do not yet possess title. Project activities that may undermine or inadvertently weaken such rights are avoided. If the project involves activities that are contingent on establishing legally recognized rights to lands, resources, or territories that indigenous peoples have traditionally owned, occupied or otherwise used or acquired, then an action plan is developed to outline the steps and timetable for achieving legal recognition of such ownership, occupation, or usage. In such cases, UNDP, with the consent of the relevant authority or implementing partner, supports such activities aimed at delimiting, demarcating and titling such lands, resources, and territories with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.

- ***Legal personality:*** Recognize rights of indigenous peoples to legal personality. Include measures to promote such recognition when necessary for project activities (Para. 7). UNDP recognizes that indigenous peoples' right to legal personality is critical to the protection, respect and fulfilment of their human rights. If a UNDP project involves activities that are contingent on the recognition of such legal personality, and such legal personality is not provided for in national laws consistent with the norms, values and customary laws of the peoples concerned, the action plan (see paragraph 16 below) outlines the steps and timetables for securing such recognition. In such cases, UNDP, with the consent of the relevant agency or implementing partner, supports such activities aimed at achieving such recognition.
- ***Involuntary resettlement:*** Prohibit forcible removal of indigenous peoples from lands and territories and ensure no relocation without FPIC (Paras. 8, 9). No project supported by UNDP will result in the forcible removal of indigenous peoples from their lands and territories. No relocation of indigenous peoples will take place without the free, prior and informed consent (FPIC) of the indigenous peoples concerned and only after agreement on just and fair compensation and, where possible, with the option of return. Without prejudice to this requirement, for further guidance see the Standard 5: Displacement and Resettlement.
- ***Full, effective and meaningful participation:*** Ensure full, effective meaningful participation of affected indigenous peoples throughout project cycle and seek FPIC on any matters that may affect rights and interests, lands, territories, resources, and traditional livelihoods (Para. 10) (also relocation and appropriation of cultural heritage). At the earliest stage of project conceptualization and design, and iteratively throughout implementation and closure, mechanisms are identified and implemented to guarantee the meaningful, effective and informed participation of indigenous peoples on all matters. Culturally appropriate consultation are carried out with the objective of achieving agreement and FPIC is ensured on any matters that may affect—positively or negatively—the indigenous peoples' rights and interests, lands, territories (whether titled or untitled to the people in question), resources, traditional livelihoods, and/or tangible and intangible Cultural Heritage. This includes any potential relocation and activities proposing the development, utilization or exploitation of mineral, forest, water or other resources on lands and territories traditionally owned, occupied or otherwise used or acquired by indigenous peoples, including lands and territories for which they do not yet possess title. Project activities that may adversely affect the existence, value, use or enjoyment of indigenous lands, resources or territories are not conducted unless agreement has been achieved through the FPIC process
- ***Documentation:*** Ensure documentation of engagement processes, including (a) mutually accepted process, (b) outcomes of good faith negotiations, and (c) efforts to accommodate IPs interests and concerns (Para.11).
- ***Prior social and environmental assessment:*** Ensure prior social and environmental impact review/assessment if project may affect rights, lands, territories and resources of indigenous peoples (Para. 12). All projects that may impact the rights, lands, resources and territories of indigenous peoples require prior review and/or assessment of potential impacts and benefits.9 Such reviews and assessments will be conducted transparently and with the full, effective and meaningful participation of the indigenous peoples concerned. The perspective of the indigenous peoples concerned is a critical starting point for impact

assessment and the indigenous peoples concerned will have ample opportunities as early as possible to participate in the assessment and development of avoidance and mitigation measures. Indigenous and traditional knowledge is a valuable resource for identifying and addressing potential risks, including hazards and disaster risks, and should be incorporated throughout the project cycle. Projects with potentially significant adverse impacts require a full social and environmental assessment conducted by an independent and capable entity.10 Assess all potential direct, indirect, social, cultural, spiritual environmental impacts on indigenous peoples, including potential impacts on their rights, lands, territories, and resources.11 Review of all substantive rights, property interests, tenurial arrangements, and traditional resource usage may be required. Avoid adverse impacts on indigenous peoples to the maximum extent possible, including exploration of alternative programming strategies, designs and locations or consideration of not proceeding with the activities. Where avoidance of adverse impacts is not possible, minimize and mitigate residual impacts in a culturally appropriate manner per the mitigation hierarchy.

- ***Appropriate benefits:*** Ensure equitable sharing of benefits in culturally appropriate manner (Para. 13). UNDP ensures that arrangements, evidenced in a documented outcome, are concluded with indigenous peoples for the equitable sharing of benefits to be derived by the project in a manner that is culturally appropriate and inclusive giving full consideration to options preferred by the indigenous peoples concerned. The provision of compensation and benefits takes into account the institutions, rules, and customs of affected indigenous peoples and may occur on a collective basis with mechanisms for effective distribution of benefits to all members of affected groups, as far as practical. Indigenous peoples affected by project activities should share equitably in benefits derived from any commercial development of indigenous peoples' lands, territories or resources or from the use or development of indigenous peoples' Cultural Heritage
- ***Support rights implementation:*** Support countries to implement their human rights duties and obligations regarding the rights of indigenous peoples (Para. 14). UNDP projects are conducted in a manner consistent with UNDP's commitment to support countries to implement their duties and obligations under domestic and international law regarding the rights of indigenous peoples, including relevant treaty obligations. Without prejudice to paragraphs 6 and 7 above, whenever possible, and at the request of the relevant government, projects will include activities that support legal reform of domestic laws to strengthen compliance with the country's duties and obligations under international law with respect to the rights of indigenous peoples, and these steps and timetable are included in the Indigenous Peoples Plan.
- ***Special considerations:*** Pay particular attention to rights and special needs of women and girls and marginalized indigenous peoples; respect, protect and promote rights of uncontacted or voluntarily isolated peoples; respect, protect, and conserve cultural heritage of indigenous peoples and ensure FPIC before use or appropriation (Para. 15).
    - ***Gender:*** While respecting the norms, values and customs of the indigenous peoples and communities concerned, UNDP ensures that projects which may affect or involve indigenous peoples pay particular attention to the rights and special needs of women and girls, do not discriminate against women and girls and ensure that women and girls have equal opportunities to participate and benefit.
    - ***Vulnerable and marginalized indigenous peoples:*** Particular attention is paid to the rights and special needs of indigenous elders, youth, children, persons with disabilities, including consideration of special measures to improve their participation in decision-making and their general well-being.
    - ***Uncontacted and voluntarily isolated indigenous peoples:*** Where projects may directly or indirectly impact uncontacted or voluntarily isolated indigenous peoples, their lands, resources, territories or their way of life, this Standard requires that such projects respect and protect the right of these peoples to remain in isolation and to live freely in that condition according to their culture. Such projects include the appropriate necessary measures to (i) safeguard the collective and individual physical, territorial, and cultural integrity of these peoples, (ii) recognize, respect and protect their lands and territories, environment, health and culture, and (iii) prohibit and therefore avoid contact with them as a direct or indirect consequence of the project. Where relevant, UNDP supports countries to

regularize the lands and territories of these peoples and establish buffer zones, to limit access to such territories, and to develop monitoring and emergency response measures, making avoidance of contact a priority.

- ***Cultural Heritage:*** UNDP respects, protects, conserves and does not take or appropriate the cultural, intellectual, religious and spiritual property of indigenous peoples without their free, prior and informed consent. If indigenous peoples affected by project activities hold the location, characteristics or traditional use of Cultural Heritage in secret, measures to maintain confidentiality are put in place.12 Without prejudice to this requirement, Standard 4: Cultural Heritage applies where Cultural Heritage of indigenous peoples may be affected by a project.

- ***Indigenous Peoples Plan:*** Develop IPP/IPPF for projects that may affect rights, lands, territories and resources of indigenous peoples. Plan summarizes potential impacts and documents culturally appropriate mitigation measures (Para. 16). If it is determined that the proposed project may affect the rights, lands, resources or territories of indigenous peoples, an "Indigenous Peoples Plan" (IPP) or "Indigenous Peoples Plan Framework" is elaborated and included in the project documentation.13 This plan is developed in accordance with the effective and meaningful participation of indigenous peoples and in accordance with UNDP Guidelines.14 The IPP is integrated into the design and implementation of the project. It must have a level of detail proportional to the complexity of the nature and scale of the proposed project and its potential impacts on indigenous peoples and their lands, territories, resources, traditional livelihoods, and/or Cultural Heritage. The IPP identifies potential risks and impacts, risk avoidance and mitigation measures, and specifies measures for provision of culturally appropriate benefits, continued consultation and participation processes, grievance procedures, monitoring and evaluation procedures, and a budget and financial plan for implementing agreed measures. Where programming activities are designed solely to benefit indigenous peoples, a separate action plan may not be required, provided that programming documentation addresses the above elements. In no case shall project activities that may adversely affect indigenous peoples, including the existence, value, use or enjoyment of their lands, resources or territories take place before the action plan is carried out.

- ***Monitoring:*** Ensure participatory approach to verifying project designed in manner consistent with Standard 6 and ensure arrangements for participatory joint monitoring of project implementation with indigenous peoples (Para. 17). With the meaningful collaboration and contributions of indigenous peoples, methods are developed and implemented for verifying and reporting that the project has been designed and implemented in a manner consistent with this Standard. Transparent participatory monitoring arrangements are put in place wherein indigenous peoples will jointly monitor project implementation with the implementing partner.

3.6.1.7 PS7 Pollution prevention and resource efficiency

The Pollution Prevention and Resource Efficiency Standard recognizes that increased industrial activity, urbanization, and intensive agricultural development often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global level. Pollution prevention and resource efficiency are core elements of a sustainable development agenda and UNDP projects must meet good international practice in this regard.

This Standard outlines a project-level approach to pollution prevention and resource efficiency. Reduction of greenhouse gas emissions that contribute to climate change is addressed in Standard 2: Climate Change and Disaster Risks.

The objectives of the standard are:

- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.
- To promote more sustainable use of resources, including energy, land and water.
- To avoid or minimize programming-related emissions of short and long-lived climate pollutants[2] and ozone-depleting substances.

- To avoid or minimize generation of hazardous and non-hazardous substances and wastes, and promote a human rights-based approach to the management and disposal of hazardous substances and wastes.
- To promote safe, effective, environmentally sound pest management.

PS 7 Summary Requirements

Pollution prevention: UNDP ensures that projects avoid the release of pollutants, and when avoidance is not feasible, minimize and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances.5 UNDP projects ensure that pollution prevention and control technologies and practices are applied during the project life cycle, utilizing performance levels and measures specified in national law or in good international good practice,6 whichever is more stringent. If less stringent measures (as compared to good international practice) are appropriate, the project will fully justify the chosen alternative through the assessment process, demonstrating that the alternative is consistent with these requirements. The technologies and practices applied will be tailored to the hazards and risks associated with the nature of the project. Upon request, UNDP will support countries to strengthen management and systems for improved pollution prevention, waste reduction, and chemicals management.

Ambient considerations: To address adverse impacts on existing ambient conditions (such as air, surface water, groundwater, and soils), a number of factors will be considered, including the finite assimilative capacity of the environment,8 existing and planned land use, existing ambient conditions, the project's proximity to ecologically sensitive or protected areas (see Standard 1), the potential for cumulative impacts with uncertain and irreversible consequences, and strategies for avoiding and minimizing the release of pollutants. If the project activities will generate significant pollutants in already degraded/polluted areas, adopt measures that avoid and minimize potential negative effects, including potential alternative locations. The project will control runoff of contaminated water from project sites and ensure polluted wastewater is treated.

Wastes: UNDP ensures that projects avoid the generation of hazardous and non-hazardous waste materials. Where waste generation cannot be avoided, projects reduce the generation of waste—including plastics—and recover and reuse waste in a manner that is safe for human health and the environment. Where waste cannot be recovered or reused, it is treated, destroyed, or disposed of in an environmentally sound manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material. UNDP projects develop waste management plans where waste generation and handling may be significant.

If the generated waste is considered hazardous,9 reasonable alternatives for its environmentally sound disposal will be adopted while adhering to the limitations applicable to its transboundary movement.10 When hazardous waste disposal is conducted by third parties, UNDP will ensure the use of contractors that are reputable and legitimate enterprises licensed by the relevant government regulatory agencies and that chain of custody documentation to the final destination is obtained. UNDP projects will ascertain if licensed disposal sites are being operated to acceptable standards; if this is not the case, the project will minimize waste sent to such sites and consider alternative disposal options.

Hazardous materials: UNDP projects will avoid or, when avoidance is not feasible, minimize and control release and exposure to hazardous materials resulting from their production, transportation, handling, storage and use. Where avoidance is not possible, the health risks—including potential differentiated effects on men, women and children—of the potential use of hazardous materials will be addressed in the social and environmental assessment. UNDP projects will consider the special vulnerabilities faced by workers as well as low-income communities, peoples with disabilities, indigenous peoples and minorities to hazardous materials. The project will develop hazardous materials management and safety measures/plans per good international practice.11 UNDP projects will consider the use of less hazardous substitutes for such chemicals and materials and will avoid supporting the manufacture, trade, and use of chemicals and hazardous materials subject to international bans, restrictions or phase-outs due to their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer, unless for acceptable purposes as defined by the conventions or protocols (e.g. the Montreal Protocol, Minamata Convention, Basel Convention, Rotterdam Convention, Stockholm Convention).

Pesticide use and management: UNDP seeks to avoid use of pesticides in supported activities. Integrated Pest Management (IPM) and Integrated Vector Management (IVM) approaches are to be utilized that entail coordinated use of pest and environmental information along with available pest/vector control methods, including cultural practices, biological, genetic and, as a last resort, chemical means to prevent unacceptable levels of pest damage. If after having considered such approaches recourse to pesticide use is deemed necessary, adopt safe, effective and environmentally sound pest management in accordance with the WHO/FAO International Code of Conduct on Pesticide Management13 for the safe labelling, packaging, handling, storage, application and disposal of pesticides. Hazards of pesticide use are to be carefully considered and the least toxic pesticides selected that are known to be effective, have minimal effects on non-target species and the environment, and minimize risks associated with development of resistance in pests and vectors. A Pest Management Plan is developed where use of a significant volume of pesticides is foreseen to demonstrate how IPM will be promoted to reduce reliance on pesticides and describes measures to minimize risks of pesticide use.

UNDP projects do not supply or use pesticides that contain active ingredients that are banned or restricted under applicable international treaties and agreements, or meet the criteria of carcinogenicity, mutagenicity, or reproductive toxicity as set forth by relevant international agencies.14 Users of any pesticides shall be trained to handle pesticides in a proper and responsible manner and utilize appropriate application equipment and adequate personal protective equipment.

Resource efficiency: UNDP projects are designed and implemented in a manner that promotes the efficient use and consumption of land/soils, energy, water, and other resources and material inputs.15 Technically and financially feasible and cost-effective efficiency measures are implemented.16 Such measures integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials, energy, and water. For resource intensive projects, benchmarking data are utilized to establish the relative level of efficiency. Principles of green design, circular economy, sustainable infrastructure and sustainable procurement are considered where feasible.

Water usage: For projects with high water demand (generally greater than 5,000 m^3/day in non-arid climates), in addition to applying the resource efficiency requirements of this Standard, measures are adopted that avoid or reduce water usage so that the project's water consumption does not have significant adverse impacts on communities, other users or on the environment and ecosystems (see Standard 1 on conserving ecosystems). Cumulative impacts of water use are assessed and appropriate mitigation measures implemented, such as water demand management, efficiency measures, benchmarking usage, alternative supplies, resource contamination avoidance, mitigation of impacts on downstream users, and water use offsets. Good international practice for water conservation and efficiency is applied, including for irrigation activities and wastewater usage.

3.6.2 SES disclosure requirements

As part of the stakeholder engagement process, UNDP's SES require that project stakeholders have access to relevant information. Specifically, the SES (SES, Policy Delivery Process, para. 21) stipulates that, among other disclosures specified by UNDP's policies and procedures, UNDP will ensure that the following information be made available:

- Information on a project's purpose, nature and scale, duration, and potential risks and impacts
- Stakeholder engagement plans and summary reports of stakeholder consultations
- Social and environmental screening reports with project documentation
- Draft social and environmental assessments, including any draft management plans
- Final social and environmental assessments and associated management plans
- Any required social and environmental monitoring reports. As outlined in the SES and UNDP's Social and Environmental Screening Procedure (SESP), the type and timing of assessments and management plans vary depending of the level of the social and environmental risks and impacts associated with a project as well as timing of the social

and environmental assessment. The Table below outlines various scenarios for disclosing both draft and final screenings, assessments and management plans.

Table 3-3: SES/SESP disclosure guidance

WHAT to Disclose		WHEN to Disclose	HOW to Disclose
Draft Social and Environmental Screening Procedure (SESP)		• During project design stage stakeholder consultations, gathering input to SESP • If assessment takes place during project design, then the SESP can also be shared and consulted as part of scoping process for assessment	• Appended to Project Concept Note and/or draft Project Document and distributed to project stakeholders
Final (and Revised) Social and Environmental Screening Procedure (SESP)		• Post PAC, when Project Document disclosed (SESP included as an Annex) • During project implementation when SESP revised due to substantive changes to project or context	• As an Annex to the Project Document, the SESP will be disclosed on open.undp.org once it is uploaded in the Corporate Planning System. • If revised during implementation, share with Project Board/PAC and upload to CPS
Draft social and environmental assessment reports, including any draft management plans/frameworks			
• Moderate Risk Project with no stand-alone assessment	When no separate assessment is needed,[2] a summary of the analysis contained in the SESP and ProDoc, together with the documents and proposed management measures, should be shared with project-affected stakeholders	• At least 30 days prior to PAC • Part of stakeholder consultations	• Summary should be translated in local language and distributed locally • Disclose draft ProDoc • Posted on UNDP unit (e.g. CO) website[3]
• Moderate Risk Project with stand-alone assessment and management plan	Drafts of any stand-alone targeted assessments and management plans	• At least 30 days prior to PAC if assessment conducted as part of project preparation • If undertaken as part of project implementation, must be disclosed and consulted on at least 30 days prior to implementation of any activities that may cause adverse social and environmental impacts	• At a minimum, ensure that a summary report of the draft assessment and management plan is translated into local languages and made available in an accessible location together with the draft assessment and management plan • Disclose draft ProDoc • Posted on UNDP unit (e.g. CO) website
• Substantial Risk and High Risk Project	Disclose draft ESIA or SESAs including any draft management plans. ESIAs and SESAs also require that a summary report be prepared in order to provide an adequate, accurate and impartial evaluation and presentation of the issues and conclusions of the technical assessment. This report must be presented in an understandable format and in an appropriate language(s), including a non-technical summation that can be understood by many stakeholders in order to facilitate and encourage comments.	• At least 120 days prior to PAC if assessment conducted as part of project preparation • If undertaken as part of project, must be disclosed and consulted on at least 120 days prior to implementation of any activities that may cause adverse social and environmental impacts	• At a minimum, ensure that a summary report of the draft assessment and management plan is translated into local languages and made available in an accessible location together with the draft assessment and management plan • Disclose draft ProDoc • Posted on UNDP unit (e.g. CO) website
Final social and environmental assessments and associated management plans	Stand-alone targeted assessments for Moderate Risk projects and ESIAs/SESAs for High Risk Projects and any management plans	• Upon receipt. Needs to be prior to the PAC if assessment conducted as part of project preparation, or if undertaken as part of project, before implementation of any activities that may cause adverse social and environmental impacts	• At a minimum, ensure that a summary report of the final assessment and management plan is translated into local languages and made available in an accessible location together with the final assessment and management plan • Posted on UNDP unit (e.g. CO) website

3.7 Compliance between National and UNDP SES

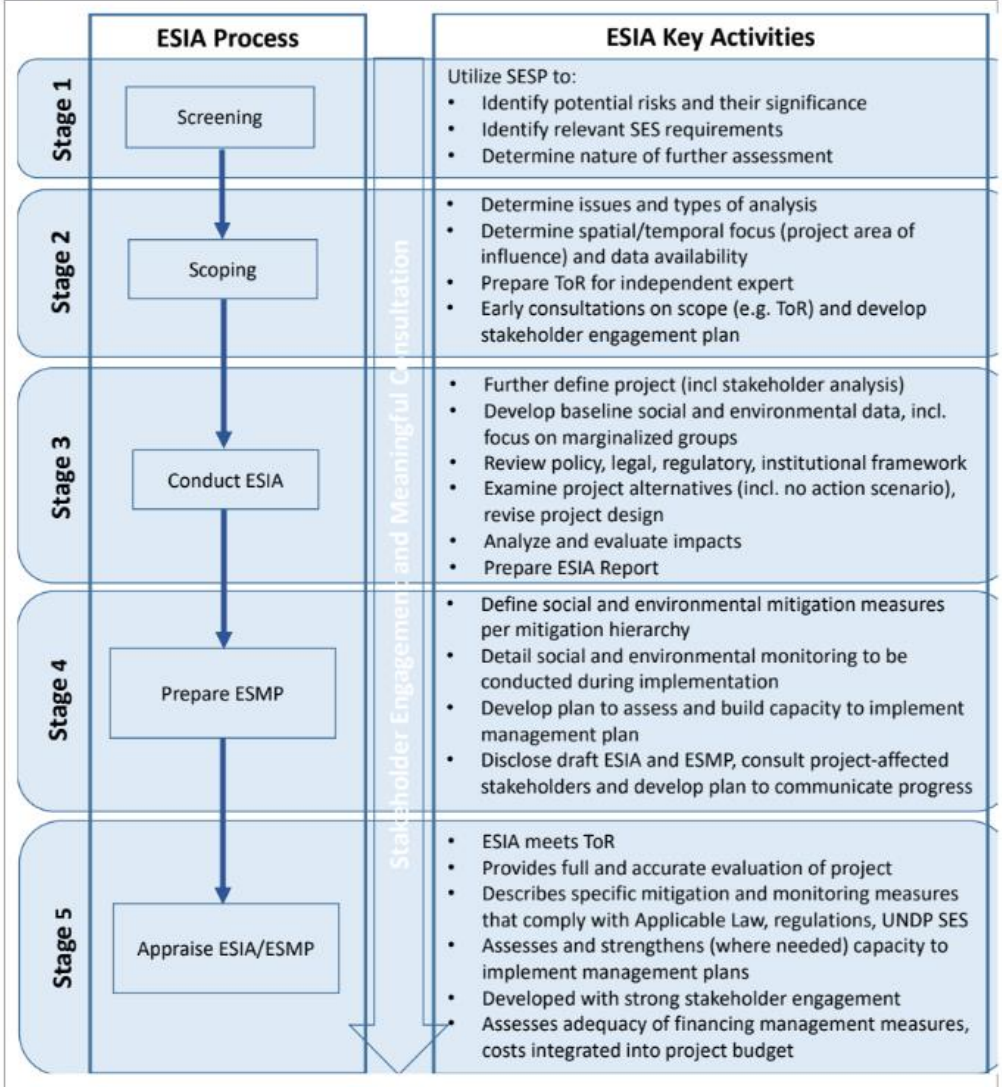
Table 3-4 provides a summary of the regulatory compliance between UNDP's SES and Timor-Leste national laws and regulations.

Table 3-4: Regulatory Compliance Analysis

Compliance with National Policies, Legislation and Institutional Framework	Compliance with UNDP's SES Policy (2015)
Note in accordance with National DL 5/2011. **Environmental Screening.** **Project categorized as A, B or C.** • **The sub-project has been categorized as Category B.** **As per the ELL, Category** C are not required to go through any environmental assessment procedure (other than classification)**.** **In accordance with Environmental Licensing Law (ELL), Decree Law 5/2011 and the Environmental Basic Law, Decree Law 26/2012 the project submitted the "Project Document" for classification.** **Annex 1 of the ELL sets out the format for the submission of the Project Document (PD) for classification of the proposed project.** **The Project Document containing the following relevant details was submitted to ANLA and accordingly the project screening and classification was done.** • **Details of the project proponent** • **Location and scale of the project, including maps and plans showing existing features around the proposed project** • **Information about the district and villages around the proposed project** • **Plans and technical drawings of the proposed project** • **The Feasibility Study** • **Information about land and water uses** • **A brief description of likely environmental impacts, including biophysical and socio-economic effects** • **Information about any public consultations that have already taken place** • **Information about any consultations with other authorities** • **The proponent's proposal for classification of the project.**	Note in accordance with UNDP SES **Social and Environmental Screening**. Risk Category determined and project classified as Low, Moderate, Substantial, High The overall project has been classified as moderate as per UNDP's Social and Environmental Safeguards Standards and based on the scope of works and the expected minor environmental and social impacts. In respect of the sub-project, the following seven project level standards have been triggered: 1. Project-level Standard 1 – Biodiversity Conservation and Sustainable Natural Resources Management 2. Project-level Standard 2 – Climate Change Mitigation and Adaptation 3. Project-level Standard 3 – Community Health, Safety and Working Conditions 4. Project-level Standard 4 – Cultural Heritage 5. Project-level Standard 6 – Indigenous Peoples 6. Project-level Standard 7 – Pollution Prevention and Resource Efficiency To address the project level standards that have been triggered, the appropriate plans have been prepared and mitigative measures identified for the various phases of the works. **Project-level Standard 3** **Community Health, Safety and Security and Working Conditions** The project involves construction, which always carries some risks. Implementation of appropriate safety plans and engagement with community, along with management of elements such as dust, noise and waste will minimize risks to communities.

• **Executive Summary** **Indigenous Peoples** **IPP is not a requirement.** **Cultural Heritage** **Other specific related legislation that applies include the DL 33/2017 on Cultural Heritage. This has also been referenced in the Chance Find Procedures for the sub-project.** **Labour and Working Conditions:** **Labor and working conditions shall follow Government of Timor-Leste Labour Law No. 4 of 2012 that is applicable throughout the territory of East Timor, to all workers and employers and respective organizations in all sectors of activity. This Labor Law addresses the basic requirements on labor relations applicable to individual and collective labor relations.** **Screening and Application for Environmental License**	The project will also facilitate the awareness raising with community about safety measures during construction and include the local contractors and staff. The BOQ and specification which forms part of the contract for implementation of the works includes key mitigation measures such as site management, provision of first aid kit, signages, PPEs and environmental compliance for noise, dust control and safety of road users and these will be closely monitored. In addition to the OHS Management Plan, the contractor will be required to provide a detailed Method Statement and establish specific health and safety measures for workers and visitors to the site to mitigate the risk of occupational hazards, safety incidents or injures. Training will be provided to the local contractor. Specific elements will be the responsibility of the contractor which forms part of the contract and included in the BOQ such as site office, provision of first aid kit, signages, PPEs and water for workers and these will be closely monitored. **Project-level Standard 6** **Indigenous Peoples** IPP plan prepared. The FPIC appraisal/screening applied and process undertaken. **Project-level Standard 8** **Pollution Prevention and Resource Efficiency** The project also includes training for local contractors and the BOQ which forms part of the contract for implementation of the works includes key mitigation measures such as site management, noise, dust and pollution control and resource efficiency and these will be closely monitored.

Figure 4. Key stages and steps of the ESIA Process



3.8 Overview of Institutional Arrangements for Environmental and Social Management

The sub-project screening and ESIA for each water supply scheme sub-project will be undertaken by the MSA and UNDP prior to any works being undertaken and the ESMP prepared. The ESMP identifies potential site-specific risks to the environment and social matters from the individual water supply schemes and outlines strategies for managing those risks and minimising undesirable environmental and social impacts. The ESMP will be part of the contractor ToR. The site supervisor will be responsible for daily environmental inspections of the construction site. The MSA will cross check these inspections by undertaking monthly audits. The MSA as the implementing agency will be responsible for the implementation and compliance with the ESMP via the collaborating partners and contractors. The Supervising Engineer/Project Manager will supervise the contractor, while the MSA will be responsible for environment and social issues.

The Grievance Redress Mechanism for those that may be impacted by the individual water supply scheme sub-project that do not consider their views have been heard was established in the ESMF and applies to each individual water supply scheme sub-project. The contractor will maintain and keep all administrative and environmental records which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints. The contractor will be responsible for the day-to-day compliance of the ESMP.

4 Sub-Project Description

4.1 Brief description and scope of the sub-project

The Government of Timor Leste with support from UNDP, is implementing the project "*Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste*" (SRC project hereafter) on adaptation to climate change impacts from extreme natural hazard events with funding from the GCF. The project is seeking to improve the resilience of vulnerable communities and their assets to climate change-induced hazards to which Timor Leste is prone.

The project is implementing a total of 38 individual rural water supply scheme sub-projects. Figure 4-1 is a map of the location of the water supply scheme projects and Annex 1 is a list of the schemes detailing their scope of works, beneficiaries and costs.

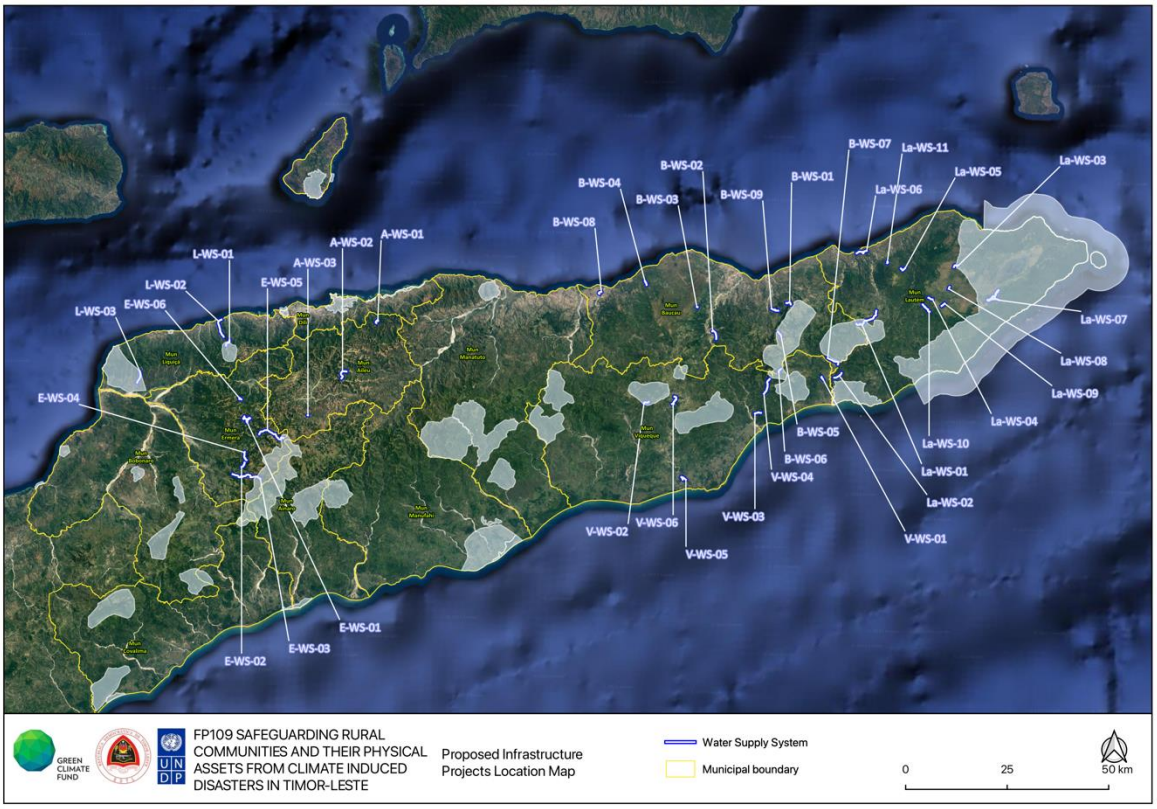


Figure 4-1:Location of water supply schemes and Protected Areas

Only two water supply schemes (L-WS-03 and LA-WS-07) are located within Protected Areas and for some schemes (LA-Ws-01, B-WS-05, B-WS-06, V-Ws-02, L-WS-01, L-WS-03, E-WS-05) the sources are on the edge of the protected areas. All these schemes are already exisiting and their current status, risk assessment, exact location of source and proposed distribution lines will be done during the detailed assessment phase.

The individual water supply sub-projects have been prioritized and proposed for climate resilient rehabilitation by the GCF-SRC project through the Municipality Integrated Development Planning (PDIM) framework. The water supply sub-projects being implemented are a combination of rehabilitation and/or extension of existing schemes, and construction of new schemes, which in general involve the following design elements, which is based on climate proofing measures to address drought, flood, erosion and landslide risks, as well as detailed socio-economics assessment of likely benefits of the water supply systems. The schemes generally comprise of a water source capture, transmission pipeline to the reservoir tank, distribution to several public water taps and continuation of the transmission pipeline to distribution tanks. From the distribution tanks the distribution pipeline takes clean water to public taps in community resident areas. The works will include combinations of the following:

1. Water capture – construction of intake structure, water capture tank installation, drilling of well and pump installation. Works at the water sources includes - site clearance, excavation, setting out the bow plank, building water capturing, setting out the pipeline (inlet and outlet). Building the fence for water source area.
2. Reservoir tank installation (60m3 and 80m3 tanks) - Site preparation, clearance and excavation for building the tank foundation.
3. Distribution tanks construction - Site preparation, clearance and excavation for building the tank foundation.
4. Public taps installation - building the concrete floor of the public tap and box control of the taps.
5. Installation of transmission and distribution pipelines - The excavation of the transmission pipeline from water capturing to reservoir tank and distribution pipeline from the reservoir tank to the distribution tank and to all public taps with dimension of width 40 cm and depth 80 cm. Manual methods of excavation by community beneficiaries as a labour for the project.

Climate risk protection measures include: In the spring area climate proofing interventions include tree planting to protect the water source quality and quantity and ensure longer term supply especially during dry season. The intervention will also include slope protection of the spring source with gabion wall protection in combination with soil bioengineering using the vetiver grass planting and tree planting to reduce the erosion and landslide during rainy season. Along the route of the transmission pipeline, slope protection is also being implemented on steep slopes.

Given that all schemes will be community-managed, following the rehabilitation works, the schemes will be operated and maintained by the communities as representatives on the Community Maintenance Group (CMG) to ensure sustainability of the investment and the benefit of the sub-project for the longer term after the expiration of the defects' liability and hand-over.

The planned works will involve site preparatory works and clearance, excavation of new and widening/extension of the existing transmission lines, topsoil removal, compaction, drainage, cross drainage and cross drainage structures, gabion installation and soil bioengineering works.

The construction-related short-term impacts to the environment such as dust pollution, vibration, and noise that will result from the construction phase are predictable and manageable with appropriate mitigation measures proposed. No negative impacts on cultural or heritage sites are foreseen from clearance or excavation works. However, a Chance Find Procedure (Annex 6) has been developed in case any unknown object or site of cultural significance is discovered during the construction works. To ensure that these mitigation measures are implemented, and that negative impacts are avoided, measures will be included in the BOQ for the works and specifications. Although the sub-projects will have minimal negative impacts, these will be carefully monitored and mitigated during implementation. Full compliance with the Environmental and Social Management Plan (ESMP) will be ensured. Regular and consistent monitoring and timely interventions to mitigate and prevent the potential negative impacts will be undertaken by the project team.

4.1.1 Pre-construction Phase

The pre-construction activities cover the initial site surveys, investigations and technical assessments to prepare the designs, BOQ and technical specifications. The main components being land inventory, geological and geotechnical investigation, material exploration, water for construction, locations of site office and construction camp, and alignment characteristics.

4.1.2 Construction Phase

The planned construction work for the climate proofed water supply rehabilitation and construction sub-projects range in length from 0.64km to 10 km of transmission and distribution lines, the installation of reservoir tanks of 60m^3 or 80m^3 , and the installation of 5 to 22 public taps for individual schemes. The sub-projects include the following main components:

1. Water Source – Most water sources are gravity fed perennial springs. However, for six sub-projects, a well will be drilled and water pumps will be installed. Water source works will include site preparation works, excavation, water capturing, building fence protection in the source area.
2. Reservoir tank installation – reservoir tanks of 60m^3 and 80m^3: Works will include site preparation work, building foundation, installing galvanize fabricated tank and distribution tanks
3. Pipe bridge: installation of pipe bridge for water transmission pipeline at river crossings
4. Public taps: site preparation works, building public taps, installing box control and taps
5. Pipeline: Installation of pipeline from transmission line starting at spring source to the reservoir tank and distribution lines to distribution tanks, and continuation of distribution pipelines to public taps
6. Soil stabilization and bio-engineering approaches: which involve the revegetation and tree planting in the hazard prone and vulnerable sections within the catchment under consideration at the spring source and at river crossings.

4.1.3 POST-CONSTRUCTION PHASE

For the six months following construction, the defects liability period, the contractor will be responsible for any repairs required to the water supply scheme. After that MSA will be responsible for ongoing maintenance. The Community Maintenance Group will be the locally deployed group to undertake ongoing operation and maintenance of the scheme.

The planned post-construction maintenance by the responsible Ministry will also ensure sustainability of the sub-project.

Given that this will be a community managed water supply facility, following the rehabilitation works, the scheme operated and maintained by the community with the community beneficiaries as representative on the Community Maintenance Group (CMG) to ensure sustainability of the investment and the benefit of the sub-project for the longer term after the expiration of the defects' liability and hand-over. The sub-project is providing training to the Facility Management Group (GMF) to ensure technical knowledge and practice of operating and maintaining the water supply schemes to safeguard the infrastructure and enhance resilience.

4.2 LAND RIGHTS

Some of the water supply schemes have been in existence for several years and the transmission and distribution lines run through communities and their farmlands. New schemes will similarly run through communities, forests and farmlands. In each case, the lands are owned by community members/households who are also the expected beneficiaries of the water supply schemes and who were preliminarily consulted and gave their approval at the project proposal stage. Water source ownerships will be ascertained during pre-assessment stage and community consultation and where individually owned; agreement will be signed on free access to the sources. Access to the land on which proposed storage tanks will be built is also assured through similar agreements with landowners. Based on preliminary consultations at project proposal development followed by the baseline survey and discussion with the officials of the sub-project municipalities, no land ownership issues are expected to block access to the sites, access to sources of construction materials or prevent site clearance and minor excavation works for the water supply system distribution pipeline routes. During sub-project consultations, the following measures regard land rights will be ensured as per section A 5.14 of IPP (Annex 5)

- Engage and involve the local authorities, affected community members, IP community and representatives during the field surveys and technical assessment and consultations and get consensus on the scope and scale of the rehabilitation works.
- Ensure that the local leaders and IP community are fully aware that the rehabilitation works will be following along the existing water supply alignment and confirm agreement on alignment for new schemes.

- No relocation, resettlement, or removal of indigenous population from their lands will take place as a result of the implementation of the infrastructure project.
- Engage IP community and their representative and ensure that sufficient understanding of the project scope and the issues in well informed manner, and consensus is reached.
- Obtain consent and agreement from IP and formal declaration for IP representatives.

As per Section A 5.17 of IPP (Annex 5) regarding FPIC, it is noted that the sub-project will not require, encourage, or coerce the relocation of IPs, nor will the sub-project impinge on the development goals of IPs and therefore compensation is not required.

However, it has been agreed with the IPs representatives that the IPs have the right to withdraw the consent/agreement and that the agreement would be revisited if the sub-project has impacts on their lands in terms of encroaching sacred places, affecting the community's livelihoods, and resources.

In case of unforseen issues with land ownership which may hinder the implementation of the sub-projects, the support from village and municipal authorities will be sought for mutual amicable solution without compromising on the rights of IP. In cases where a solution is not feasible, alternative schemes of similar scope will be identified and presented to Project Board for endorsement and approval by GCF.

4.3 WATER RIGHTS

The water sources are mainly springs which will be individually assessed for water availability to ensure adequacy and were found to be sufficient to cover the service area for each water supply scheme. The Multi Hazards Vulnerability and Risk Assessment (MHVRA) and maps developed by the project will be also used to ascertain the availability, sufficiency and reliability of water to meet demand. The main sources identified for the water supply schemes are therefore able to provide water throughout the entire year and there are no water disputes which will be reconfirmed at the feasibility stage.

The water quality of the water sources are also being assessed at design stage and monitored during construction and regularly as part of O&M. Water quality measurements are made at the sources by collecting and testing samples at BTL. The results are required to be within the standard of WHO Guideline that (6.5 – 8.5) and salinity is 0.1. It should be noted that all water sources in Timor Leste are considered sacred sites (lulik sites) but the sub-project is not expected to have any negative impact on the traditions and culture of the people and communities. Due to their sacred nature, any works at the springs requires the performance of a ritual ceremony which will be conducted by the sub-project with the community before the commencement of any works and detailed in the IPP (Annex 5).

4.4 LAND OWNERSHIP

In Timor Leste, the issue of land rights and land claims is extremely complex due to the historical legacy of different legal regimes, and people's displacements during the conflict. With support from international partners, the Government of Timor Leste has drafted the land law and it is hoped that with its passing, a system for land registration will be created.

The Constitution provides for rights to private property including the right to own and transfer private property. The Juridical Regime of Real Estate No. 11/2003 provides preliminary rules pertaining to land tenure and property rights. The Civil Code contains provisions governing decisions pertaining to land including the sale and lease of land. Decree Law No. 27/2011 Regime for Regularization of Ownership of Immovable Property in Undisputed Cases enables those claiming private property rights to register undisputed claims where land has been surveyed and cadastred, and the Directorate of Lands, Property and Cadastral Services (DLPCS) has confirmed that the cases are indeed undisputed. The government has developed three new laws to fully administer all land parcels, particularly those involving multiple claims: (i) the Special Regime for the Definition of Ownership of Real Estate (2017); (ii) Law 8/2017 the Law on Expropriation; and (iii) the Law on Real Estate Financial Fund.

4.5 DESCRIPTION OF LEGAL OWNERSHIP OF LAND TO BE USED FOR THE PROPOSED SUB-PROJECT

No acquisition of land is required by the sub-project. No involuntary resettlement or associated impacts will be caused by the sub-project. Some of the water supply sub-projects (6) are rehabilitation of existing schemes while the majority of schemes (32) are construction of new schemes and ownership is confirmed from all landowners through which the transmission and distribution pipes will pass. During public consultation and through the FPIC process the sub-project ensures that signed consent is provided by all landowners. The signed letter of declaration has to be provided by the local authorities and host community as part of the necessary documentation and declarations required for compliance in accordance with national requirements and with the UNDP SES, prior to commencement of sub-project implementation. In cases of rehabilitation, existing alignment will be used for the rehabilitation work, for which no additional land is required. For new water supply schemes, no new land will be required as most of the landowners will be the beneficiaries of the project and during preliminary assessments and consultations have agreed to give the land freely for the construction of the schemes which will bring water to their villages. However, during the detailed assessment and consultation this will be reconfirmed in writing. In case any owner is not willing to give his land for free, alternate solutions will be explored in consultation with the community and relevant government authorities such as realignment and relocation of the transmission line and reservoirs.

In addition, as the sub-projects were drawn from the PDIM list of projects that sucos put together and then escalated ultimately to the national level for approval and funding, a participatory process has been undertaken in the identification and scoping of the project, and general agreement from landholders was already in place at proposal stage and earlier. During EIA and FPIC consultations and assessments for each scheme, formal documentation of land use agreements are obtained and owners' willingness to participate formally documented.

4.6 Feasibility

During the pre-construction phase, technical, environmental and socio-economic feasibility studies are undertaken in line with the requires stipulated by the articles 15 and 16 of Decree Law 5/2011 Environment Licensing Decree Law (ELDL) Of Timor-Leste. This allows for an exploration of both intended and unintended impacts which may or may not be attributable to the project activities, and forms a key part of the ESIA study.

4.7 Socio-economic feasibility

The water supply scheme sub-projects were selected from the Government list of priority projects. In addition, the GCF project confirmed the project benefits during GCF proposal feasibility study socio-economic analysis. For this ESIA and ESMP, an assessment has been conducted on the feasibility of the water supply scheme sub-projects using high level data analysis (at municipal level), which will be further elaborated down to the community level during site-specific feasibility studies for each scheme.

Beneficiaries

For each water supply scheme sub-project area, the number of direct beneficiaries were obtained from the 2015 census data analysed against sub-project area characteristics. These water supply systems serve the population to ensure the safe access of a domestic water supply. Thus, this population who will benefit from these sub-projects is considered. This will include an assessment of the existing safe water coverage, i.e. the percentage of the population currently without access to safe drinking water in the sub-project area and will benefit from access to the water supply scheme. The assessment fully characterises the following aspects of water use and availability within each project area:

1) Access to water by types of water supply:
    a. Common protected well
    b. Common unprotected well
    c. Private protected well
    d. Private unprotected well

e. Shared protected well
f. Shared unprotected well
g. Surface water
h. Standpipe
i. Water supply scheme
j. Other

Municipality	Main source of drinking water (% of households)										
	Piped or Pumped Indoors	Piped or Pumped Outdoors	Public Pipe/ Tap	Tubewell/ Borehole	Protected Well or Spring	Rainwater collection	Bottle water	Well or Spring (Not Protected)	Water vendors/ tank	River, Lake, Stream or Irrigation channel	Other
Aileu	2	13	53	1	3	0	0	4	0	24	1
Baucau	2	5	37	2	8	0	0	13	5	25	2
Ermera	2	16	44	1	4	0	0	6	0	24	3
Lautem	3	4	46	3	14	0	0	16	0	11	3
Liquica	2	31	39	3	3	0	1	3	2	15	1
Viqueque	3	6	40	4	8	0	0	8	0	28	2

In the target municipalities, only 2% of households in Aileu, Baucau, Ermera and Liquica, and 3% in Lautem, have access to indoor piped or pumped water to their property. In Liquica 31% of households have access to outdoor piped or pumped water to their property, while as few as 4% in Lautem, 5% in Baucau, 6% in Viqueque and 13% in Aileu, have outdoor piped or pumped water to their property. In Aileu 53% households have access to public pipe/tap water, while the figure is 46% of Lautem, 44% of Ermera, 40% of Viqueque, 39% of Liquica and 37% of Baucau households. In the target municipalities 1-4% of households use tubewell/boreholes; 3-14% use protected well or spring while 3-16% use unprotected wells or springs and 11-28% use rivers, lakes or irrigation channels.

Continuity of water supply

The number of hours of water supply in a day for each water supply scheme is considered. This is assessed based on current number of hours of service from the existing water supply arrangements for each community compared to the number of hours of service that would be achieved with the new water supply scheme.

Throughout Timor Leste, water supply is intermittent with more than half of households receiving non-potable water for less than 6 hours on 4 or fewer days per week. There is no monitoring of water production or when it is put into distribution, no program to ascertain levels of leakage, as there is no bulk metering or service connection metering apparatus.

Bathing facilities

Access to bathing facilities is assessed as follows:

a. Indoor bath/shower (for exclusive use)
b. Indoor bath/ shower (shared)
c. Outdoor bath/ shower (for exclusive use)
d. Outdoor bath/shower (shared)

e. River pond etc
f. Other

Administrative Post, Suco	Type of bathing facility (% of households)					
	Indoor bath/shower (for exclusive use)	Indoor bath/ shower (shared)	Outdoor bath/ shower (for exclusive use)	Outdoor bath/shower (shared)	River pond etc	Other
Aileu	4	2	64	9	21	1
Baucau	4	3	37	11	37	8
Ermera	3	3	53	14	24	3
Lautem	5	3	54	16	14	8
Liquica	3	4	64	17	9	4
Viqueque	4	3	37	10	41	6

In the target municipalities, only 3-5% of households have indoor bath/shower for their exclusive use and 2-4% of households have access to shared indoor bath/shower. By far the most common type of bathing facility is outdoor bath/shower for exclusive use with 64% of households in Aileu and Liquica, 54% of households in Lautem, 53% in Ermera and 37% in Baucau and Viqueque having such facilities. 9% to 17% of households have shared outdoor bath/showers while 9-41% of households use river/pond for bathing.

Access to WASH/human waste disposal facilities

The sanitation facilities in the localities are an important consideration with regards to the public health of the population and risk of contamination of the water source and supply system. Thus, information on current latrine availability is collected and assessed for all sub-project areas. The following presents the status of WASH facilities in 2019.

Human waste disposal facilities/methods of private households							
Municipality	Private Households	Proportion of flush & latrine toilets					
		Total flush toilet	%	Total latrine	%	No facility & others	%
Aileu	**7,598**	2593	34%	4,436	58%	569	7%
Baucau	**22,976**	6152	27%	13,497	59%	3,327	14%
Ermera	**20,671**	5601	27%	11,680	57%	3,390	16%
Lautem	**12,050**	2965	25%	5,458	45%	3,627	30%
Liquica	**11,885**	3,557	30%	6,142	52%	2,186	18%
Viqueque	**15,297**	2,585	17%	5,753	38%	6,959	45%

Many government and donor projects have been working on the implementation of the Action Plan for Community Sanitation and Hygiene of the Ministry of Health (MoH) in Timor Leste. According to the recent data collected by Ministry of Health with the support of different organisations mainly UNICEF in 2022/2023, 3 out of the 6 target municipalities (Ailieu, Ermera and Liquica) are declared Open Defecation Free (ODF) and the remaining 3 (Baucau, Viqueque, Lautem) either have not reached the full ODF status or the full data is still not available. The Table below shows the ODF status of 38 water supply projects sites to be implemented by the Project.

Project Code	Project Title	Municipality	Funding Source	ODF status
A-WS-01	Construction of gravity-fed water supply system in suku Liurai of Remexio	Aileu	GCF	ODF
A-WS-02	Construction and installation of 2 km gravity-fed water supply system from Tataloko – Erluli in Fahisoi Lequidoe	Aileu	GCF	ODF
A-WS-03	Construction and installation of 3.5 km of water supply system in suku Lahae	Aileu	Co-financing	ODF
B-WS-01	Water supply system from Irabere to community in Suco namanei	Baucau	Co-financing	ODF
B-WS-02	Water Supply system to suco Laisorulai	Baucau	GCF	OD
B-WS-03	Water Supply system to aldeia uaimanaboe and uatobala, suco uailili	Baucau	GCF	OD
B-WS-04	Water Supply system to aldeia uailacama, suco vemase tasi	Baucau	GCF	OD
B-WS-05	Water supply system to daruisi, suco guruca	Baucau	Co-financing	OD
B-WS-06	Water supply system to aldeia ailita	Baucau	Co-financing	ODF
B-WS-07	Water Supply system to wawakasa and suco larisula	Baucau	Co-financing	ODF
B-WS-08	Rehabilitation of water supply system in suco vemase tasi	Baucau	Co-financing	OD
B-WS-09	Rehabilitation of water source and canalize to community in suco afaca	Baucau	Co-financing	OD
E-WS-01	Construction of water supply system in suku Estado	Ermera	GCF	ODF
E-WS-02	Construction of water supply system 4 km of aldeia Ilat, suku Baboe Leten	Ermera	Co-financing	ODF
E-WS-03	Construction of water supply system in Baboe craik	Ermera	Co-financing	ODF
E-WS-04	Construction of water supply system in Lauana	Ermera	GCF	ODF
E-WS-05	Construction of water supply system in Letefoho Vila	Liquica	GCF	ODF
E-WS-06	Construction of water supply system in Hatuletan	Ermera	GCF	ODF
La-WS-01	Construction of water supply system in mafuro	Lautem	Co-financing	ODF
La-WS-02	Construction of water supply system in Dilno	Lautem	Co-financing	ODF
La-WS-03	Construction of water supply System in Suco Bauro	Lautem	GCF	ODF
La-WS-04	Rehabilitation of water supply (water pump) system in suco souro	Lautem	GCF	ODF
La-WS-05	Extension of water supply system (water pump installation) suco Maina 1	Lautem	Co-financing	ODF
La-WS-06	Construction of water supply system (drilling) in Suco Daudere	Lautem	GCF	ODF
La-WS-07	Water supplay system in suco muapitine	Lautem	GCF	OD
La-WS-08	Construction of water supply system (drilling) in Convention Centre Lautem	Lautem	GCF	OD
La-WS-09	Extension of water supply system (Water Pump installation) in Caiwaca	Lautem	Co-financing	ODF
La-WS-10	Construction of water supply system (drilling) in Suco Omucano	Lautem	GCF	ODF
La-WS-11	Construction of Water Supply System in Serelau, Lautem	Lautem	GCF	ODF
L-WS-01	Construction of gravity-fed water supply system in Fatumasi	Liquica	Co-financing	ODF

L-WS-02	Construction of gravity-fed water supply system in Lauhata	Liquica	Co-financing	ODF
L-WS-03	Construction of gravity-fed water supply system in Guico	Liquica	GCF	ODF
V-WS-01	Extension of water supply system (water pump installation) in irabere	Viqueque	Co-financing	Data not available
V-WS-02	Construction of water supply system in bahaneo liaruka	Viqueque	Co-financing	Data not available
V-WS-03	Construction of water supply system (drilling) in Suco uma uain leten	Viqueque	GCF	Data not available
V-WS-04	Construction of water supply system in luhan raikuak	Viqueque	Co-financing	Data not available
V-WS-05	Construction of water supply system (drilling) in Suco Raitahu	Viqueque	GCF	Data not available
V-WS-06	Construction of water supply sytem in ossu decima	Viqueque	GCF	Data not available

As per the above Table based on the recent data from MoH and UNICEF, 24 out of 38 project sites are ODF while remaining are not yet ODF or full data is not available.

A social survey is carried out in all communities along the water supply scheme route through various consultations as part of the design process in order to identify issues which will directly affect the design and implementation of the works. The survey allows the sub-project to be informed and also assure the communities on preservation of culturally sensitive sites. Also, where necessary, social aspects are incorporated into the design and mitigation measures to be adopted. The water supply sub-projects are expected to yield positive benefits to the community and contribute to the improvement of the socio-economic life of the households through improved access to safe and reliable domestic water supply which should lead to improved health and socio-economic indicators and improved living standards. Other direct positive impacts from the sub-project will include employment opportunities from the employment during implementation and the acquisition of knowledge and skills related to construction and water resources management by communities during operation. This will also contribute to increased income generation and income support owing to the wages earned and skills gained by the communities. This is in addition to the trickle-down effect of the increased domestic revenue within the communities from the construction activities including purchase of materials, use of local accommodation, food and other services. Consultations with the local communities have validated the communities need for the water supply scheme and willingness to participate.

A socio-economic factor worth noting in respect of the proposed project where the water supply project is expected to create maximum possible worker days for local employment and ensure inclusive participation of at least 30% women during implementation. There will also be social inclusion of people with disabilities as applicable. The sub-project will ensure that no children or bonded labor is involved in accordance with the Republic of Timor-Leste Labor law (2012) and international standards through inclusion of the relevant clauses in contract, training of the contractor and regular monitoring for compliance.

The following is the Social Feasibility Assessment data required by ANLA which must be completed prior to and during detailed feasibility and design studies or each sub-project.

B. Socio-economic impacts
Provide a brief description of the effects of the proposed project on local peoples. This brief assessment should be based on existing knowledge and available information. This should include, as relevant:
a. Health impacts
b. Socio-economic impacts
c. Economic impacts
d. Cultural heritage impacts
e. The current uses of the land and resources for traditional purposes
f. Impacts to any historic, archeological, sacred sites.

The feasibility studies which focused on assessing significant socio–economic impacts including number of beneficiaries, social service facilities etc. and potential environmental impacts including land

use, climate, soil characteristic etc. during the implementation of the proposed sub-project found that all water supply schemes are technically and socio-economically feasible. The ANAL Environmental licence is obtained from the Secretary of State for the Environment on the basis of the technical, environmental and social feasibility of the schemes.

4.8 Technical feasibility

The following criteria were assessed with regard to technical feasibility.

Prevalence of waterborne diseases
The ***availability of effective human waste disposal facilities*** is key to avoiding the ground and soil contamination. Some chemical components such as NO_3^- and PO_4^{3-} which can accumulate in groundwater caused by pit-toilet leakages is regarded as the main negative environmental impact that affects surface water and aquifers. Where pit latrines are constructed in proximity to tube wells, they can be a source of groundwater contamination. Additionally, linkages between inadequate sanitation facilities and insufficient water supply can lead to an increase in the health issues. Hence, the viability of rural water supply systems is dependent on the quality of sanitation facilities in these communities.

According to the recent data collected by Ministry of Health with the support of different organisations mainly UNICEF, 3 out of the 6 target municipalities (Ailieu, Ermera and Liquica) are declared Open Defecation Free (ODF) and the remaining 3 (Baucau, Viqueque, Lautem) either have not reached the full ODF status or the full data is still not available. Based on the recent 2023 data from MoH and UNICEF, 24 out of 38 project sites are ODF while remaining are not yet ODF or full data is not available. The project during implementation will collect data during feasibility stage to reconfirm the ODF status of the project sites.

The **number of water borne diseases** such as diarrhoea or other related cases in the community during recent years is considered with regards to the population that will benefit from each water supply system. Diarrhoea and tuberculosis are among the most common diseases in Timor-Leste. Victims of diarrhoea and tuberculosis constitute a huge part of the 47 percent of deaths from communicable diseases annually. The lack of access to potable drinking water and the lack of basic sanitation in the country, most especially in the rural areas, encourages the spread of these highly infectious diseases. Malaria, a mosquito-borne disease, has ravaged the rural parts of Timor-Leste and caused high mortality rates among children.

According to the latest WHO data published in 2020 Diarrhoeal diseases deaths in Timor-Leste reached 285 or 4.04% of total deaths. The age adjusted Death Rate is 27.41 per 100,000 of population ranks Timor-Leste 54th in the world. It is the 6th leading cause of death in Timor Leste after stroke, tuberculosis, coronary heart disease, influenza and pneumonia and lung disease. This information is gathered from secondary data. Additional secondary and primary data on water borne diseases will be collected at the feasibility stage of the project for each project site.

Water Quality
Available conditions of total coliform and E. coli contamination are considered based on water sampling and testing at BTL during the feasibility stage of the project.

Water surveys are carried out based upon the Design Standards and Guidelines of BTL-EP, following which designs, drawings and specifications are prepared. The technical studies establish the viability for the construction of the water supply scheme, but with the need to safeguard and protect the water and land from erosion and landslides. It has been noted that the implementation will involve community beneficiaries as labour to implement the construction with the company, after the implementation of the structural works and physical works, soil-bioengineering work will be applied to ensure safeguard against climate risk such as erosion and landslide, but also to prevent conditions that could lead to source contamination. Apart from providing employment opportunities to members of the host community, the approach assures safeguards and protection of the environment.

The treatment methods used to treat raw water will be assessed for each scheme. Boiling is the most common method currently used at the domestic level in rural areas, in particular for drinking water, as it reduces the thermotolerant coliforms in drinking water sources. The prevalence of other methods should as commercial filters (which is usually used in combination with boiling), practises of traditional water purification methods such as those descended from the traditional practices of ancestors and forefathers, for example, using a clean cloth to cover the pot in which water is collected, or using valuable herbal flowers to float on the surface of the water in wells, will also be examined. Drinking water purification protocols in rural regions of the world use locally abundant plant-based coagulants to remediate and treat drinking water. Treatment techniques, applications of ceramic pot filters and other commercially manufactured filters are also alternative methods for drinking water treatment in many parts of the rural areas in the world.

Water Purification/Treatment methods will be catagorised as follows:

a. Boiling
b. Filtration
c. Boiling + Filtration
d. Traditional Methods
e. Other

The technical feasibility studies for each sub-project will be conducted in line with this ESMP, and the site-specific ESMP will include site-specific design details and management measures as necessary. The following is the Technical Feasibility Assessment Form (ANLA) which must be completed prior to and during detailed feasibility and design studies for each sub-project.

Table 4-1: Technical Feasibility Assessment Form (ANLA)

Format for the Project Document to be submitted for screening

The project proponent may be requested to provide the following information in the PD. The format is under discussion at present (Sep-2013), it may be regulated by SSE-NDE as an official legislation such as Ministerial Diploma.

This information is required to enable the Environmental Authority make a decision whether the proposed project falls within Category A, Category B or Category C as defined in Article 4 of the Decree Law 5/2011, the Environmental Licensing Law, and thus whether the proposed project must go through the EIA process or IEE process or does not require an environmental assessment process.

The screening decision may be delayed if the information provided in the Project Document is incomplete.

The Project Document must contain, as relevant:

1. Name, address and contact details of the proponent.
This information should also contain the principal contact person for the proponent (name, title, phone number and email address)

2. Location and scale of the project
This information should include;
a. maps and plans of the location of the project, showing project components and activities. The maps or plans should be at the appropriate scale to help determine the relative size of the proposed project, components and activities
b. If possible, provide GPS coordinates
c. Maps or plans of appropriate scale showing the location of the proposed project, components and activities relative to existing features, including but not limited to;
i. Watercourses and water bodies
ii. Linear and transport components (for example, airports, ports, roads, electrical power transmission lines, pipelines)
iii. Other features of existing or past land use (for example cultural or sacred sites, commercial developments, houses, residential areas, industrial facilities)
iv. Community lands and nearby communities
v. National parks, protected areas, or other environmentally sensitive areas
vi. Fisheries and fishing areas
vii. Hunting areas.
d. Photographs of the proposed project location, where possible
e. Description of the legal ownership of the land to be used for the proposed project, including any title, deed or documentation, or lease or other authorization.

3. District and villages
Provide the name of the district in which the proposed project will be located. Where the project may have any impact on another district, provide details of those likely affected districts.
Provide the name of the village or villages in which the proposed project will be located. Where the project may have any impact on another village, provide details of those likely affected villages.

4. Plans and technical drawing of the proposed project

5. Feasibility studies of the proposed project
This section should include a summary of the technical studies on the feasibility of the proposed project. The studies themselves may be included as annexes to this Document. Where the feasibility studies are not included, they shall be made available to the Environmental Authority upon request at any time during the environmental assessment process.

6. Land and water use
Describe any land rights or water rights that may be affected by the proposed project

7. Environmental impacts
A. Biophysical impacts
Provide a brief assessment of the likely environmental impacts from the proposed project. This brief assessment should be based on existing knowledge and available information. This information should include:
a. a description of the physical and biological components,
b. a description of the physical and biological components that may be negatively affected by the proposed project
c. whether there are likely to be any cross-border impacts and, if so, the nature and extent of those likely impacts
d. whether there are likely to be any global impacts, including climate change impacts, and, if so, the nature and extent of those likely impacts
e. Typical environmental impacts are; air pollution, water pollution, noise and vibration, soil contamination, land subsidence, odors, land degradation, soil erosion, sedimentation, water use change, climate change, and so on.

B. Socio-economic impacts
Provide a brief description of the effects of the proposed project on local peoples. This brief assessment should be based on existing knowledge and available information. This should include, as relevant:
a. Health impacts
b. Socio-economic impacts
c. Economic impacts
d. Cultural heritage impacts
e. The current uses of the land and resources for traditional purposes
f. Impacts to any historic, archeological, sacred sites.

8.Public consultation
Provide the following information to the extent that it is available or applicable:
a. A list of stakeholders that may be interested and potentially affected by the carrying out of the proposed project. In addition, this section should describe any consultation activities carried out to date with stakeholders, including:
i. Names of stakeholders previously consulted;
ii. Date(s) each stakeholder was consulted; and
iii. Means of consultation (e.g., face-to-face or community meetings, mail, email, website or telephone).
b. An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided.
c. An overview of any ongoing or proposed stakeholder consultation activities.
d. A description of any consultations that have occurred with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.

9. Consultation with other authorities
If there has been any consultation with any other authority, this should be summarized here. This section should also indicate any permissions, permits or licenses that the project proponent will have to obtain from any other authority.

A local resource-based approach that seeks to minimize carbon footprints will be adopted in the design and implementation of each sub-project. The technical studies establish the viability for the water supply systems, with the need to safeguard and protect the water supply schemes and surrounding land from erosion and landslides. It has been noted that the use of labor-based methods, which are being adopted by the sub-project, besides providing employment, is also environmentally friendly, and will ensure protection of the environment as it minimizes destruction of the environment.

4.8.1 Hydrological analysis and water requirement assessment

Water source maximum design discharge assessment is based on the technical and economic considerations.

The technical assessment relies on the use of the following formula for discharge estimation for stream/ spring source:

$Q = V/t$

Where:

Q = Discharge in litre/second measured during a dry season
V = Volume of water in litre
t = Average time in second

4.8.2 Water availability for water supply

Water sources (spring) for the water supply schemes are assessed for their capacity to supply water all year round, hence dry-period and rainy period water availability are estimated using the above equation. Discharge is measured in the source in dry seasons and considered for design purpose. Therefore, the analysis of water availability is estimated on the basis of capacity to meet all water demands for at least 100% of the time or the reliability of scheme to supply 100% of the service area all year round.

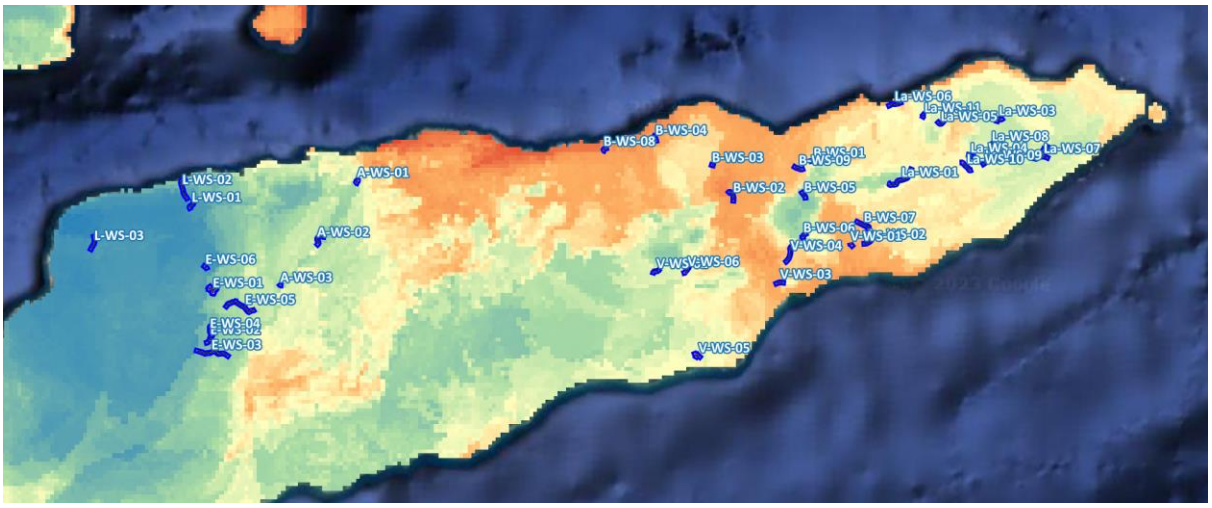
The water availability and reliability studies utilise detailed topographic data (Digital Elevation models) of the water supply scheme sub-catchment, land use, soil and geology type information as well as catchment average rainfall data for dry and rainy seasons.

4.8.3 Water Demand calculations

Water demand calculations are done based on considering population increase of 2.5% per annum for the design period of 15 years and minimum discharge of 30 lit/person/day and maximum discharge of 60 lit/person/day. These are based on BTL guidelines for rural water supply schemes.

4.8.4 Climate induced drought risk assessment

Multi Hazards Risk and Vulnerability maps prepared by the SRC project will be be used for climate induced drought risk assessment as illustrated below:



Metrics: Drought Hazard – Assessment focus solely on rainfall deficiency Or the Consecutive number of dry days: the duration of a dry spell in number of days.

Interpretation: The longer a dry spell – the longer a region does not receive any rainfall – the worse the impact on physical assets.

Table below are the values of number of consecutive dry days based on a return period of 100 years.

Project Code	Min	Average	Max
A-WS-01	30	34	37
A-WS-02	27	32	33
A-WS-03	31	31	31
B-WS-01	34	37	42

B-WS-02	53	55	56
B-WS-03	47	47	47
B-WS-04	54	54	54
B-WS-05	26	30	30
B-WS-06	30	30	30
B-WS-07	45	46	47
B-WS-08	57	58	66
B-WS-09	43	45	48
E-WS-01	22	24	27
E-WS-02	23	23	24
E-WS-03	22	27	29
E-WS-04	23	24	25
E-WS-05	29	31	33
E-WS-06	14	14	16
L-WS-01	12	14	14
L-WS-02	12	19	26
L-WS-03	12	14	15
La-WS-01	31	37	40
La-WS-02	45	46	48
La-WS-03	33	34	34
La-WS-04	37	38	38
La-WS-05	36	38	40
La-WS-06	42	45	49
La-WS-07	34	34	34
La-WS-08	36	37	38
La-WS-09	38	38	38
La-WS-10	38	38	39
La-WS-11	38	38	38
V-WS-01	49	50	50
V-WS-02	36	36	36
V-WS-03	44	46	50
V-WS-04	42	43	45
V-WS-05	36	36	37
V-WS-06	37	37	38

4.9 Environmental Feasibility

The water supply schemes are within the category of small-scale rural infrastructure and are subject to EIA under the ANLA (and ESIA under UNDP SESP). Environmental Feasibility studies are conducted, both as regards impact and mitigation measure. Environment feasibility studies are carried out by GCF engineer and Field Coordinator and accompanied by PDIM staff, and MAF- Extension Worker including suco leader such as suco chief, Chief of Aldeias and community members who are benefitting from the scheme. As part of the study GPS points and other relevant information is collected for drafting EIA and ESIA reports.

The environmental feasibility studies enable the preparation of drawings and designs. In Table 4-3 above Section 7 of the Environmental Feasibility Assessment Form (ANLA) reproduced below which must be completed during feasibility and design studies for each sub-project.

7. Environmental impacts
A. Biophysical impacts
Provide a brief assessment of the likely environmental impacts from the proposed project. This brief assessment should be based on existing knowledge and available information. This information should include:
a. a description of the physical and biological components,
b. a description of the physical and biological components that may be negatively affected by the proposed project
c. whether there are likely to be any cross-border impacts and, if so, the nature and extent of those likely impacts
d. whether there are likely to be any global impacts, including climate change impacts, and, if so, the nature and extent of those likely impacts
e. Typical environmental impacts are; air pollution, water pollution, noise and vibration, soil contamination, land subsidence, odors, land degradation, soil erosion, sedimentation, water use change, climate change, and so on.

Based on the environmental feasibility studies, the proposed water supply schemes which pass through agricultural land, community houses, and cultural/lulik sites at water springs, will have no significant negative, long-last or irreversible environmental impacts. Where risks have been identified, mitigation strategies have been proposed (see chapter 6-8 below).

4.10 Project Alternatives

This section analyses the water supply schemes sub-project alternatives in terms of site, technology scale and project management options.

4.10.1 No sub-project alternative

The No sub-Project option in respect to the proposed water supply scheme sub-projects implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however, involve several losses to both the government and the communities. There will be a continuing need to undertake frequent maintenance to the existing water supply schemes, which will be more costly due to the non-climate resilient nature of the existing schemes and the increasing risk to infrastructure from climate change. This will put a strain on limited local resources and hinder local economic growth and development. In areas that currently have no water supply scheme, this alternative will mean that they continue to live without the basic reliable and safe water supply for domestic use. The communities will continue to depend on unreliable and unsafe water supply systems, inequitable water distribution leading to lack of access to water for some and therefore will continue to stoke conflict between and within communities. The No sub-Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The health and wellbeing of the local people would remain unchanged
- Women and girls will continue to bear the burden of water collection which will continue to impact their health, education, safety and living standards
- The economic status of the local people would remain unchanged.
- The local skills would remain underutilized and underdeveloped.
- Reduced local and national social and economic activity due to lack of access to basic daily water needs.
- Increased isolation at local, national, and international levels.

- No employment opportunities will be created for Timorese who will work in the proposed project area.
- Increased rural poverty and associated problems.
- Increased food insecurity
- Increased risk of damage to infrastructure, and economic losses and loss of livelihood
- Increased cost of maintenance of the WS.

From the analysis above, it becomes apparent that the No sub-Project alternative is no alternative to the people of beneficiary communities and the government of Timor Leste.

5 Baseline Conditions

5.1 Geographical Context

The island of Timor sits at the south-eastern end of the archipelago of volcanic islands, the Banda Arc, running eastwards from the Indonesian island of Bali. Timor-Leste occupies the eastern half of the island and is a relatively small country with an area of 14,954 km^2. This includes the main land area of 13,989 km^2, Oecusse enclave of 817 km^2, Atauro Island of 140 km^2 and Jaco Island of 8 km^2. Administratively, Timor-Leste is comprised of 13 Districts including Oecusse enclave, 65 Administrative posts and 442 sucos or villages.

The topography, particularly of the mainland, is comprised of hills and mountain ranges and is dominated by a massive central mountainous backbone rising to approximately 3000 meters and dissected by deep valleys (**Error! Reference source not found.**). On the northern side, the mountains extend almost to the coast, but on the southern part the mountains taper off some distance from the coast, which provides areas of coastal plain. Approximately 44% of the territory has slope of more than 40%.

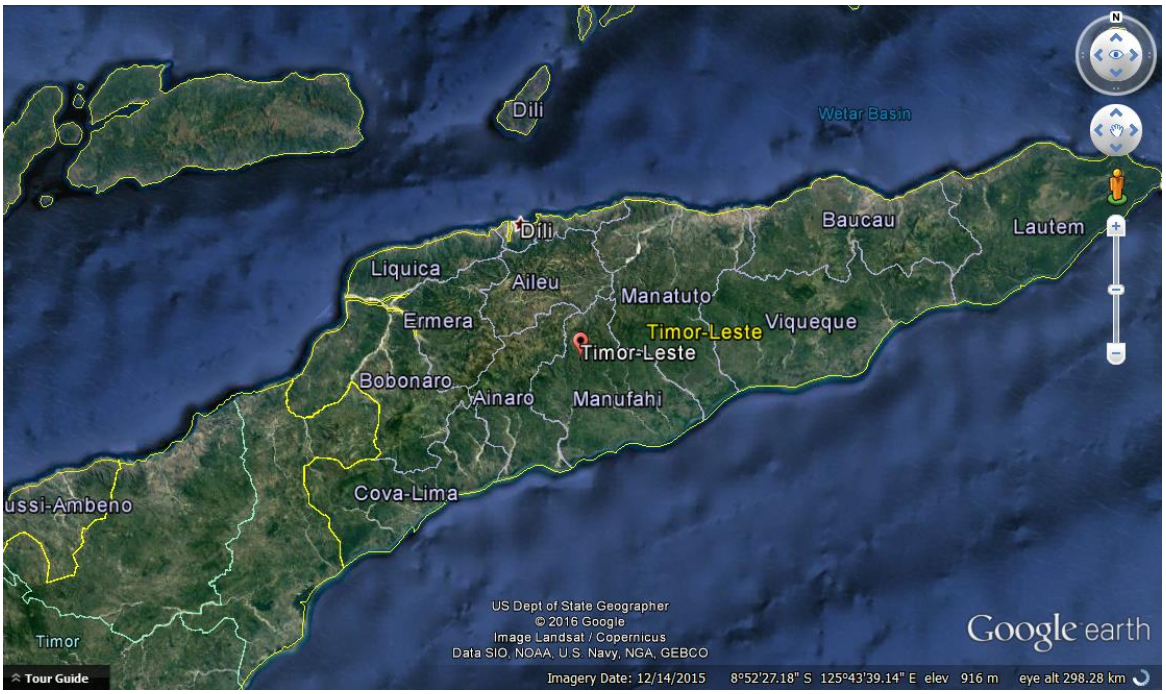


Figure 5-1: Map of Timor-Leste

5.2 Climate

The overall climate of Timor Teste is classified as tropical savannah (Koppen-Geiger type —Awǁ), with all areas in the country having a pronounced dry season. Timor-Leste is affected by the West Pacific Monsoon, which moves to mainland Asia during the southern hemisphere winter, and south to Australia in the southern hemisphere summer bringing a switch from very dry to very wet conditions and a change in the direction of the prevailing winds (GoDRTL 2016). This means that the wet season lasts from approximately December to May, and the dry season lasts from approximately June to November, but there is some regional variability. In general, rainfall levels are highest in the south and decrease to the north, with some areas receiving little to no rainfall for eight months of the year (USAID 2017). July is the coolest month, whereas October is the warmest.

5.2.1 Precipitation and Temperature

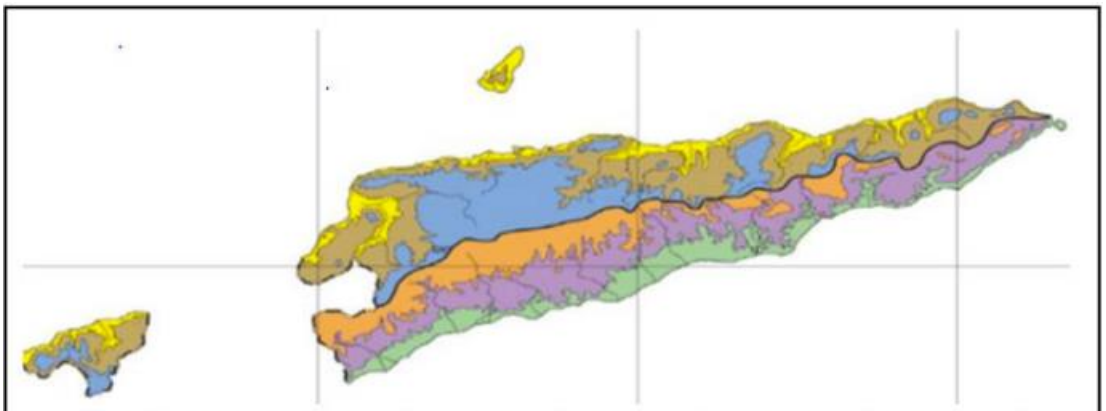
There is little seasonal variation in **temperature** with monthly mean temperatures varying by no more than 3oC between the coolest months of July and August to the warmest months of October and November. Diurnal (daily) temperature variations range from 7oC to 13oC. Temperature decreases with altitude: for example, in Maubisse, which is 1400 m above sea level, the mean monthly temperature is approximately 17oC in July and 24oC in November, compared with Liquica, which is 25 m above sea level and where the mean monthly temperature is approximately 25oC in August and 31oC in February.

There are two distinct **rainfall** patterns: the northern monomodal rainfall pattern, which produces a 4–6 months wet season beginning in December that affects most of the northern side of the country and tapers to the east; and the southern bimodal rainfall pattern, which produces a longer (7–9 month) wet season with two rainfall peaks starting in December and again in May, which affects the southern side of the country. Annual rainfall is very low along the northern coast of East Timor (<1000 mm y-1), low to moderate throughout the central and elevated areas (1500–2000 mm y-1), and moderate (>2500 mm y-1) in high altitude areas. In common with most tropical locations, intense downpours of rainfall are common.

The country's climate zones are determined by precipitation and temperature characteristics (UNDP 2018):

- ***North Coast Region***. This area is characterized by annual average mean temperatures of more than 24C, annual rainfall of less than 1500mm, and a dry season lasting for around five months;
- ***Mountainous region***. This area is characterized by average mean temperatures of less than 24C, annual rainfall over 1500mm, and a dry season lasting more than four months.
- ***South Coast region.*** This area is characterized by annual average mean temperatures of greater than 24C, average annual rainfall of approximately 2500mm, and a dry season lasting for only three months.

In addition, Barnet (2003) cit. GoTL (2014) indicated that the country is categorized into six agroclimatic zones based on rainfall pattern.



No	Zone (Percent land area)	Area (%)	Altitude (ma.s.l.)	Annual rainfall (mm)	Months of Rain
1	North Coast Lowlands	10	<100	<1000	4-5
2	Northern Slopes	23	100-500	1000-1500	5-6
3	Northern Uplands	20	>500	> 1500	6-7
4	Southern Uplands	15	>500	>2000	9
5	Southern Slopes	21	100-500	1500-2000	8
6	South Coast Lowland	11	<100	<1500	7-8

Figure 5-2: Agro-climatic zones of Timor Leste

Timor-Leste is influenced by several cyclical oscillations. The most widely known is the El Niño Southern Oscillation (ENSO), though the country's climate is also influenced to some extent by the Indian Ocean Dipole (IOD), the Pacific Decadal Oscillation (PDO), and the Madden-Julian Oscillation (MJO). These phenomena influence the regional climate on intra-annual, inter-annual, and inter-decadal time scales and influence the total amount of precipitation received as well as water resource availability throughout the country. However, more research is needed in this area, as only the impact of ENSO has been studied with respect to Timor-Leste (World Bank 2018).

In all places, El Niño weather pattern cause overall drier conditions and reduced rainfall in the January-March, with some places experiencing reduced rainfall in comparison to the amounts usually received in these months during non-El Niño years. El Niño years are usually associated with drought, and in general, the wet season is delayed by two to three months, with significant implications for agriculture, food crops planting and consequently food security. Due to decreased precipitation there is also reduced groundwater availability. According to official estimates, the 2015-16 El Niño-induced drought event affected approximately 350,000 people located mainly in the central highlands and eastern parts of the country (USAID 2017). In years following El Niño, rainfall can be higher than the annual average, which can lead to increased flooding. During La Niña conditions dry season rainfall tends to be above normal and the wet season starts earlier and finishes later. Above average rainfall can lead to more landslides and significant erosion mainly the topsoil ENSO also affects ocean conditions; in El Niño years sea level can be as much as 20cm below the long-term average, while during the La Niña phase it can be 10-20cm above normal. During La Niña years wave heights tend to increase by 1-2.5m along the north coast and up to 3 meters along the south coast relative to normal conditions (Secretary of State for Environment 2010).

5.3 Geology

The geology of Timor-Leste is complex both compositionally and tectonically. Compositionally, Timor-Leste contains a wide variety of rock types (igneous, metamorphic and sedimentary) with a range of textural (fine-grained and well sorted to large boulder conglomerates) and chemical (felsic to ultra-mafic) compositions. It is important to note, however, that volcanism is not a key feature of the geology in mainland Timor-Leste, in contrast to the surrounding islands. The tectonic history of Timor-Leste, which sits at the interface of the Eurasian and Australian Tectonic Plate boundaries, has received much attention and several tectonic evolution models exist. Geological work has been undertaken pre-1975 before Indonesian occupation with foreign access (Audley-Charles, 1965); 1975-1999 during Indonesian occupation with limited foreign access; and post-1999 with independence of Timor-Leste and foreign access once again possible.

5.4 Soils

There are four distinct soil types that occur in Timor-Leste, reflecting the regional geology. In general, the soils of Timor-Leste are not very fertile, do not store water well, and are easily eroded. The soils located at the mouth of the River Loes, to the south of Manatuto, and to the east of Baucau, are of recent alluvial formations and are not suitable for agriculture. The soils found in the eastern regions such as in Maliana, Ainaro, and Maubisse, and to a lesser extend in Baucau, Lauten and in Los Palos are the most fertile and are suitable for agriculture. The soils of alluvial origin are confined to the coastal regions around Dili, Suai and Manatuto and are poorly drained soils. The soils present in the highlands around Ermera are rich in organic matter and suitable for agriculture.

5.5 Hydrology and Water Resources

Timor-Leste has been broadly divided into twelve 'Hydrologic Units', which are groupings of climatologically and physio-graphically similar and adjacent river basins. Each of these hydrologic units comprise a number of rivers, 29 main river systems in total, of which 12 in the north and 17 in the south. All rivers are generally short and fast-flowing.

The watersheds of Timor Leste produce an estimated 22,300 million m^3 of water per year (mm^3 /yr.), with a total internal renewable water resources of 8,215 mm3 /yr. or 6,932 mm^3 /yr. per inhabitant, ranking 63 out of 179 countries on renewable water resources availability per capita (World Bank, 2018).

This lower potential derives from a dry tropical climate characterized by long dry seasons. Based on 2004 available data, water withdrawal was 14% of the total country's renewable water resources, of which 91% was used for irrigation and livestock and 9% for domestic use.

Surface water accessibility is more problematic than that of groundwater sources. The meteorological variation results in highly variable river flows and flash floods in the wet season and low or no flows in the dry season. These distinct variations between the northern and southern coastlines result in smaller river catchments with diverse hydrological patterns.

Studies of Timor Leste aquifers[12] in representative areas found the following:

- The aquifers of Timor-Leste can be systematically mapped as three principal types of Intergranular, Fissured and Localised, in accordance with international guidelines;
- All aquifers show high levels of structural heterogeneity indicating groundwater flow will be affected by local factors, requiring further detailed localised analysis;
- The majority of Timor-Leste's groundwater is currently of high quality, apart from some coastal sea water intrusion, and the quantity and flow rates may vary widely;
- Intergranular sedimentary aquifers are focused along the coast of Timor-Leste, centred around river channels, and are susceptible to reduced storage and seawater intrusion due to changes in rainfall and sea level rise, particularly in smaller water catchment areas;
- Fissured karst aquifers are principally in the east of Timor-Leste and groundwater yield is susceptible to changes in rainfall, responding rapidly (seasonally) across the broad topographic highs; and
- Localised fractured aquifers are principally in the west of Timor-Leste and groundwater yield is also susceptible to changes in rainfall, responding rapidly (seasonally) in the many localised topographic highs.

An assessment of Timor Leste's aquifers to climate change found that increases in the sea level are likely to cause seawater to move landward and intrude into aquifers, given that the estimated sea level rise of 9 mm per year is much greater than the average tectonic rise of Timor of 0.5 mm per year. The aquifers with the highest vulnerability to climate change are coastal intergranular aquifers with smaller catchment areas and both fissured and localised aquifers in topographic highs, due to higher 'potential impact' from changes in rainfall and/or sea level rise. Combined with the limited 'adaptive capacity', these areas have high vulnerability to the predicted climate change into the future.

5.6 Ecology

Located in a crossover zone between Asia and Australia, Timor Leste contains animals common to both regions. The varied terrain of mountains, thousands of miles of coastline, dry forest, grasslands, and a tropical climate provide habitats that sustain many different species.

Timor Leste is part of the Timor and Wetar Deciduous Forests terrestrial ecoregion, which contains a very distinctive fauna representing a mix of Asian and Australasian species; the Lesser Sunda Islands freshwater ecoregion, which may contain as many as 10 endemics e.g., Oryzias timorensis is restricted to Timor; the Sunda Islands coral reef hotspot, and the Wallacea biodiversity hotspot.

The primary forest area of Timor Leste has been reduced to around 88,000 hectares (220,000 acres), or 1% of the territory. Dense forests are found only on the south coast or in mountainous areas. The vegetation consists mostly of secondary forests, savannah, and grasslands. Flora includes ironwood, eucalyptus, black eucalyptus, redwood, sandalwood, cendana, and lontarwood. Fauna include deer, monkeys, cockatoos, horses, cows, and beo kakoaks.

There's only one dry forest left in the country, located in Nino Konis Santana National Park. The forest is home to many of the over 250 species of birds in the nation, at least 10% of them thought to be

[12] E.g. Australian Aid project - https://www.agriculture.gov.au/sites/default/files/documents/groundwater-timor-leste-report.pdf

unique to Timor Leste. Some of these birds face the threat of extinction, including the Yellow-crested Cockatoo, the Timor sparrow, the Timor Imperial-pigeon, the Timor Green-pigeon, the Black Cukoo-dove, the Wetar ground dove, and the Iris lorikeet.

The main environmental threats come from the widespread use of slash-and-burn agriculture, which has led to deforestation and soil erosion. According to a 2006 report issued by the International Union for Conservation of Nature and Natural Resources (IUCN), threatened species included seven species of birds, one type of reptile, and three species of fish.

5.7 Climate change

Projections cited in the reports of Intergovernmental Panel on Climate Change (IPCC), including those of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) project notable changes in the region's climate for the future. In Timor-Leste, temperature is expected to increase by 0.3–1.2 °C by 2030 and 0.8–3.6 °C by 2070. Rainfall is predicted to decrease in the dry season and increase in the wet season with overall rainfall increasing by 7–13% by 2050. Extreme rainfall events such as tropical cyclones are expected to decrease in frequency but increase in intensity. Furthermore, an increase in rainfall is predicted for areas of high altitude. For example, the mountainous districts are projected to experience higher increase in rainfall during the wet season. In addition, sea level is expected to rise by between 9 and 76 cm by the year 2100. Based on climate modelling under Timor Leste's NC's the following main indices of climate change are predicted (See Annex 2 of the project proposal for a detailed discussion on climate change in Timor Leste):

- In the longer term, annual mean temperature over Timor-Leste has increased consistently with a rate of about 0.016°C per year. It is very likely that temperatures in Timor-Leste will continue to increase. Prior to the 2040s, the mean temperature anomalies in Timor-Leste are expected to increase by up to as much as 1°C for all emission scenarios. Post 2040s, the rate of increase will vary based on different scenarios. For the high emission scenario (RCP8.5) the increase in temperature relative to current conditions may reach 3°C by 2100, while for the low emission scenario (RCP2.6) it may increase by up to 0.5°C
- Historically, the sea level surrounding the main island of the country has risen at about 5.5 mm/year. Over 100 years, the sea level rise may reach 76 cm. Based on the Pacific Climate Change Science Program (2011); Pacific Ocean acidification has also been increasing in Timor-Leste's waters. It will continue to increase and threaten coral ecosystems.
- Historical data suggests that during the 20th century and early 21st century, there were already some shifts in the peak of the wet season. In the future, the wet season onset may be delayed by about 20 days from the current climate pattern, while dry season onset will be delayed by as much as 11 days depending on the period and emission scenarios. Thus, in some areas the length of the wet season would shorten.
- Extreme rainfall events are projected to become fewer but more intense as a result of decreasing numbers of tropical cyclones albeit with stronger intensity (Pacific Climate Change Science Program 2011).
- Decreases in rainfall are projected in some parts of the country, as well as changes in its seasonal distribution, with respect to the 1981-2010 conditions. For example, the drier area on the northern coast of the country (annual rainfall less than 1000 mm) will expand in the future.
- The water balance suggests that the area with a duration of water deficit period (LDP) of more than 8 months will expand while the area with LDP<5 months will shrink

5.7.1 Climate change Impacts

Most climate-induced disasters in Timor-Leste are localised and periodic, with resultant serious impacts upon local communities. Major hazards include flash floods, droughts, landslides and destructive winds. 76% of the of the population have been personally affected by these disasters.

The communities living in areas with difficult road accessibility and low capacity to respond to disasters are generally the worse affected. Most of the rural population is dependent on agriculture for their livelihood. In Timor-Leste, agriculture employs 64% of the labour force and contributes 26.5% of the GDP. With this high level of dependence on agriculture, even low intensity disasters will add significantly to their vulnerability and increased food insecurity.

5.7.1.1 Impact on Water Resources

Climate change could result in a drier dry season, wet season's characterised by fewer but more intense events, and El Niño events, which result in delayed rain and less rain, may become more severe. These changes may exacerbate existing problems with drought, floods, and water quality. A drier dry season would increase vulnerability to drought because of high year-to-year rainfall variability combined with minimal water resource infrastructure. Lack of water in the dry season is already common, particularly on the northern side of the island, affecting agricultural production. Drought in 2001 to 2002, and the late arrival of the wet season in 2002 to 2003 resulted in an estimated 34% decline in maize production between 2002 and 2003 (22). As a result, 110 000 people were identified as needing food aid, particularly in the drier maize producing districts of Aileu, Ainaro, Ermera, and Liquica. East Timor is also prone to flooding, especially on the southern side of the country. Cova Lima, Manufahi, and Viqueque each receive more rainfall than northern districts, and experience two wet seasons each year. Intense rainfall events often cause flooding in these places. For example, unseasonal rains in June 2003 resulted in intense flooding and associated landslides in Manufahi and Cova Lima, which affected 778 families and caused damage to 74 houses and 610 ha of rice paddy. The severity of these flooding events is most probably exacerbated by upland farming practices that causes soil erosion, and the damage caused by landslides downstream is also a function of deforestation. Water Resources infrastructure such as water storage, water supply and flood defence infrastructure are lacking in rural areas and climate change will increase vulnerability of existing infrastructure and the requirement of additional and more resilient infrastructure.

Groundwater sources are increasingly being seen as an alternative source to surface water supplies in recent years in Timor-Leste due to prolonged drought. Although groundwater provides a useful alternate source of water, it is also a vulnerable resource. When the rate of groundwater extraction exceeds the average long-term recharge rate from rainfall, groundwater levels will decline and impact on aquifer yields and quality. The impact of this decline can include the following:

- Lower yields mean less water is available for domestic water supply, stock drinking water, and irrigation;
- Springs, streams and rivers fed by groundwater may partially or completely dry up, causing both adverse human and ecological effects;
- Low flows of rivers may not be sufficient for proper dilution of discharged wastewater, resulting in greater surface water pollution;
- Increased threat of saltwater intrusion into fresh groundwater supplies in coastal regions; and
- Deterioration of groundwater quality.

To avoid irreversible damage to groundwater systems, an available extraction volume for any aquifer should be established based on the long-term sustainable yield assessment, i.e., the volume of groundwater that can be extracted annually from a groundwater basin without causing adverse effects. Groundwater extraction information for Timor-Leste is currently not available.

5.7.1.2 Impact on Soil Erosion

Clearing of vegetation occurs as part of maize production in highland areas, but is also a legacy of the use of defoliants during Indonesia's war against the Timorese in the late 1970s, harvesting of forest resources during the period of Indonesian occupation, and changes in energy availability since the Indonesian withdrawal in 1999 and the subsequent removal of the subsidy on kerosene that existed under Indonesian rule, resulting in firewood becoming a cheaper source of fuel and a viable means to

earn cash income for rural communities. In addition to these anthropogenic factors, climate change may exacerbate soil erosion.

5.7.1.3 Impact on Agriculture

Widespread use of slash and burn agriculture coupled with poor agricultural and catchment management practices has led to deforestation and soil erosion, which have resulted in increased intensity of runoff from the country's mostly steep terrain, causing significant soil erosion, increased incidence of landslides and flash flooding and low soil fertility for crop production. These vulnerabilities will be exacerbated under climate change due to the changes in the intensity, frequency and seasonality of rainfall and temperature described above. Potential areas for the establishment of new agricultural areas (expansion) will become more limited. Increasing cropping intensity will be more difficult without supporting irrigation water. In some areas of the north coast of Timor-Leste, even planting crops once a year is not possible. Changes in climate would result in a reduction of maize yield between 5% and 20% from the current yield depending on climate scenarios. Crop failures due to extreme climate events may also increase. Agriculture is the most important socioeconomic sector in East Timor, accounting for approximately 75% of employment. Given the heavy reliance on subsistence agriculture to survive, the population is therefore vulnerable to shocks such as floods and droughts which lead to crop failures. Dependence on the agricultural sector means that climate change impacts can be far-reaching given that the capacity to adapt is low. Overall, a potential loss equivalent to 6.7% of combined gross domestic product (GDP) per year by mid-century due to climate change impacts, is expected.

Maize is the most abundant and accessible crop, making it the most important source of food supply in East Timor and is grown in shallow soils on steep slopes using shifting cultivation practices involving burning existing vegetation and planting seeds in the ashes. It is estimated that up to 20% of the country is burned each year for maize production. Limited land in mountainous areas, means that fallow periods are short, resulting in declining yields which are further exacerbated by soil erosion and nutrient depletion, both of which will increase with climate change. Most agriculture, including maize is unirrigated, making it vulnerable to drought and irregular rainfall.

Rice is the second most important food crop in East Timor in terms of volume produced and a key indicator of food security, with areas producing at least one rice crop per year being more food secure that those that cannot. Two crops are produced mainly in the southern part of the island where there are two rainfall peaks in the wet season, while in the north only 1 peak is possible to less rice is produced. In general, the second crop only accounts for 10% of total production, with the bulk of production coming from single crops irrigated by rain-fed flooding. However, economic loss and physical damage to rice is mainly from flooding in extremely wet years.

Irrigation is a critical input for rice production. Of 498 sucos, 286 have irrigation of some kind, and these roughly correspond to the areas that produce at least one rice crop per year (30). However, most of these systems operate in the wet season only, there being insufficient water in the dry season and no significant water storage systems for year-round irrigation of crops.

Approximately 10 000 ha of irrigation rice systems are still damaged and require rehabilitation. The areas that produce a single crop each year, and which account for the bulk of rice production, may be sensitive to climate change, particularly if rainfall in the wet season decreases. All rice crops in flood prone areas may experience reduced production in the future because of increased flood events, while increased temperature may result in increased evaporation of water from paddies.

Coffee is the most important cash crop in East Timor, accounting for approximately 90% of foreign exchange. Some 25 000 families derive a significant proportion of their income from coffee production, and a further 15 000 families derive a small portion of income from it. However, the real price of coffee declining due to overproduction, commodity dependence, and increasing concentration of power in the hands of a few agribusinesses in the supply chain, thus shifting income from producers to traders. Coffee requires an average annual rainfall of some 2000– 3000 mm y1 and relative humidity of 70%–90% (3). It also requires a distinct dry season for flowering and ripening of berries (3). For these reasons, coffee is grown in the northern and southern highlands, and is a major crop for most sucos in Aileu, Ainaro, Ermera, Liquica, and Manufahi. Rising temperatures and increased rainfall may alter humidity at lower altitudes where coffee is grown and shift the altitude band favourable for coffee production

upward. Increased rainfall in the dry season may also have an adverse effect on flowering and ripening of berries.

In summary, climate change has direct and indirect effects on crop production and the socioeconomic circumstances of Timor-Leste.

5.7.1.4 Impact on coast

A sea level rise of 76 cm may result in increased shoreline erosion, saltwater intrusion into freshwater aquifers, salinization of drinking and agricultural water. Coastal flooding and coastal erosion may increase impacting infrastructure such as buildings and roads, agricultural activity and may increase shoreline retreat. Parts of the main road from Dili to Com via Baucau run close to the water's edge. The main port at Dili would be at increased risk as well as the new port and oil industry infrastructure at Suai. In some places, such as Oecussi, neap tides can cause inundation of settled and farmed areas with seawater, which suggests that such places are vulnerable to rising sea levels.

5.7.1.5 Impact on infrastructure

The impact of all hazards has been shown to increase under climate change and, the severity of impact is dependent on the ability of communities to cope with hazards under climate change. The analysis shows that the increase in the areas affected as well as the number and length of key infrastructure affected, increases for all municipalities and for all hazards. In most cases, at least doubling in percentage terms.

5.7.2 Natural Hazard Risks under baseline and climate change conditions

5.7.2.1 Flood Risk

Flood is one of the most common disasters in Timor-Leste, resulting from a combination of heavy monsoon rain, steep topography and widespread deforestation. There are three types of flooding in Timor-Leste namely: (1) flash flooding that occurs when high intensity seasonal rainfall occurs on steep slopes; (2) riverine flooding that occurs when water accumulates in lowland or upland flood plains and river banks have insufficient capacity to contain the flow resulting in an overflow of the river and (3) Urban or pluvial flooding when urban drainage system have insufficient capacity to accept high intensity rainfall which results in surface water flooding in paved areas (mainly in Dili and Baucau).

Based on an indicative national flood hazard map of Timor-Leste an assessment of flood risk under baseline and climate change conditions show that under climate change and with coping strategy taken into account, flooding has greatest impact on houses in Dili, main roads, rural roads, cropland and rice plantations in Baucau and water sources in Lautem. It is important to note that when coping capacity is not considered flooding has the greatest impact on houses in Dili, rural and main roads in Lautem, cropland in Cova Lima and Rice plantations in Baucau. The overall annual average damages for the municipalities which fall within the 6 UNDP prioritized sub-catchments is $ 2.046 Million and the highest damages, as would be expected, would be sustained in Dili, the capital, which would account for 57% of all damages. Manatuto has the second highest flood damages and accounts for a third of all flood damages. In urban areas, the total damages for the 1 in 100 year event would be $13.16 Million. Almost twice, covering 7 sucos. In rural areas $7.9 Million in damages would be incurred for the 1 in 100 year flood and would affect 34 sucos in the 6 priority catchments. In the 6 municipalities, a total of $36.26 Million in damages, 1.05 Million in crop income losses and $6.84 Million in total income losses is possible under moderate and high severity flood events. In addition, 38 water supply sources, and 6,813 ha of irrigated land will be impacted. 53.47% of rice areas will be affected.

5.7.2.2 Landslide Risks

Landslides induced by flooding are reported to be one of the most common disasters in Timor-Leste. The country experienced large-scale landslides in many mountainous areas, especially in Liquiçá district, due to heavy rains brought by La Niña weather patterns from December 2007 to April 2008. A

landslide in Bobometo village of Oekusi destroyed at least 2 hectares of local farmland and forced the evacuation of 15 families living around the affected area. In Timor-Leste, high occasional rainfall, steep slopes, high weathering rates and slope material with low shear resistance or high clay content are the main preconditions for landslides. Apart from their potential to cause casualties and damage, landslides can also cause major disruption to the fragile road network, and can potentially damage fragile irrigation and water supply stuctures, isolating communities and disrupting services for long durations. Deforestation, vegetation destruction by fire or other sources and inappropriate agricultural activities in Timor-Leste have contributed to creating conditions that make areas prone to landslides.

Based on an indicative national landslide hazard map of Timor-Leste an assessment of landslide risk under baseline and climate change conditions show that under climate change and with coping capacity taken into account, landslides have the greatest impact to house and water sources in Viqueue, main and rural roads and cropland in Ermera, and rice plantations in Baucau. In the 6 project municipalities, economic damages due to high and very high intensity landslide could reach $186.6 Million to properties and $13.4 Million to total income lost. In addition, 1,042km of roads, 14,250 road beneficiaries, 15 water supply sources and 1,767 ha of land are at risk of damages.

5.7.2.3 Soil Erosion Risks

Soil is a valuable resource of Timor Leste. The nature of soil in a place is largely influenced by such factors as underlying geology, climate, and natural vegetation. The island of Timor sits at the eastern end of and just south of the archipelago of volcanic islands, the Banda Arc, running eastwards from the Indonesian island of Bali. This volcanic arc is the surface expression of lithospheric subduction currently taking place as the Australian crustal plate moves north eastwards towards and underneath the Eurasian plate. The island of Timor was formed from the collision of the Indo-Australian tectonic plate with the Eurasioan plate to the north. Calcareous rock from old coral reefs were forced out of the ocean and the underlying igneous (volcanic) and metamorphic (deep, heated and hard) rock layers from underneath the surface were exposed. This has resulted in a complex soils structure laid over extensively fractured parent materials. The topography consists of a narrow plain around the coast and a central mountain range dominating the country. This central chain of mountains reaches a height of 2980 m at Mount Ramelau (or Tatamailau), which is located approximately 70 km south of Dili in the district of Ainaro. Almost half of Timor's land has a slope of 40° or more. Extensive steep slopes and high rainfall lead directly to extensive soil creep and downhill slumping and soil erosion which in severe cases often gives rise to major landslips which are also abetted by the highly sheared and therefore weak nature of the bedrock. The loss of soil stability and soil erosion can take place due to the removal of vegetation cover, and numerous construction activities. It can cause the loss of soil fertility and induce slope instability. Poor management of soils can lead to erosion and subsequent loss of soils and the habitats and livelihoods that it supports.

Based on an indicative national soil erosion hazard map of Timor-Leste an assessment of soil erosion risk under baseline and climate change conditions show that under climate change and with coping capacity considered, erosion has the greatest impact to houses in Ermera and water sources in Lautem. Impact of soil erosion on agriculture is 4th highest in Baucau municipality with estimated losses of $ US 926,347. In the 6 project municipalities, the total potential economic damages from moderate and high severity erosion is just under $10 Million with 140 water supply sources, 50,693 ha of land affected, and 312 irrigation schemes (105 of which are in Baucau). 80.98 % of rice areas are affected representing 133,422 households.

5.7.2.4 Drought Risk

Timor-Leste has been experiencing a rapidly worsening drought during the winter season especially in the northern areas (CRM, 2009). Historical records indicate that Timor-Leste has experienced El Niño-related droughts in the past. During the period of 2002-2003, and most recently in 2015-16. El Niño-related drought affects almost all of Timor-Leste. In 2006, the El Niño Southern Oscillation (ENSO) caused delays in the typical wet season throughout the country for more than one month. In addition, the rainfall pattern remained erratic and dry spells were reported in some areas until late February 2007. That year there were serious negative impacts on agricultural production due to the late onset of the rainy season and erratic rainfall pattern. There was a 30% drop in production in 2007 which is attributed to drought (FAO/WFP, 2007). In 2015 and 2016, El Niño resulted in water and food shortages across

the country causing crop failure, limited production, reduced family income with 78% of the population affected by food and water shortages, the death of 70,000 livestock and an additional 70,000 reported sick. Limited supply of water has led to a significant gap in cereal production for two consecutive years and the ongoing drought is putting a critical pressure on the limited resources of rural households.

In an El Niño year, rainfall is not only diminished but the onset of the rainy season is delayed as well (Dolcemascolo, 2003). Because of this, studies of drought in time and space are essential. It is also important to study the probability of having a consecutive dry period during the growing season of a crop. Drought susceptibility has been mapped based on the probability of occurrence of droughts at different severity levels (i.e. moderate, severe, and extreme and moderate to extreme) in the 24 stations.

Based on an indicative national drought hazard map of Timor-Leste an assessment of drought risk under baseline and climate change conditions show that under climate change and with coping capacity considered, drought has the greatest impact to houses in Ermera and water sources in Aileu. Given most agriculture is 'backyard' subsistence agriculture, it is reasonable to use impact of droughts on dwellings as a proxy to impact on the backyard subsistence agriculture that much of the rural communities rely on. However overall impact of drought on agriculture is highest in Baucau municipality (with estimated losses of $ US 1.7 Million for an extreme drought). In the 6 project municipalities, the economic damages that would be incurred in a high and very high severity drought event is $12.5 Million for crop income, with 193 water supply sources affected, and 62,808 ha of land and 398 irrigation schemes impacted (163 in Baucau). 98.63% of rice production areas are at risk from high and very high drought which will affect 172,403 properties and nearly the whole population of Timor-Leste.

5.7.2.5 Multi-hazard risk to infrastructure

For dwellings, the riskiest municipalities for both the baseline and climate change scenarios are Baucau, Ermera, Dili and Aileu respectively. The result reflects the density of population in these municipalities and the depth of poverty and hence lack of coping capacity. In addition, given that dwellings can be considered as a proxy to subsistence agriculture, the combined risk reflects the likely combined risk to the ability of communities in these highest risk municipalities to cope with, and recover from hydrometeorological hazards.

Rural roads in Baucau and Ermera are at highest combined risk from the combination of flooding and landslide hazards, followed by Aileu and Ainaro under baseline and climate change conditions. Main roads in Baucau are also at highest combined risk followed by Lautem, Cova Lima, Viqueue and Ermera under baseline conditions and climate change conditions. Ainaro main and rural roads show increased risk under climate change.

Water Sources in Lautem, Baucau, Aileu and Ermera are at highest risk from the combination of flood, landslides, droughts, and erosion under baseline conditions. Water sources in Lautem, Aileu, Liquica and Cova Lima are at highest risk under climate change. It should be noted that the risk to individual hazards is very different in different municipalities and this should be considered during the design of intervention measures in specific municipalities.

Agricultural land is assessed based on the combined effect on cropland, rice and orchards. Baucau, Viqueue, Ermera, and Cova Lima are the municipalities worst affected by flooding landslides and wind, under both baseline and climate change conditions. It should be noted, however, that analysis of the individual crops show different ranking of impact by hazards which will be considered when considering intervention measures targeted in different municipalities.

5.8 Socio-economic baseline

Since gaining independence in 1999, Timor-Leste has faced great challenges in rebuilding its infrastructure, strengthening the civil administration, and generating jobs for young people entering the work force. This pervasive infrastructure deficit keeps the rural population in isolation, lacking access to basic public services and deprived of mobility and economic opportunities. A network infrastructure is crucial for the functioning of today's economy and society, notably infrastructure for energy (e.g., grids, power stations, pipelines), transport related fixed assets, such as roads and bridges and water supply (such as, water supply pipelines, reservoirs, waste water treatment facilities and irrigation

canals). They are sets of interconnected networks of physical infrastructure which facilitate the production and distribution of goods and economic services and form the basis for the provision of basic social services. There are considerable gaps in this network infrastructure in Timor Leste, hindering service delivery, growth and economic development. In fact, many country assessments for Timor Leste recognise a direct correlation between the high incidents of poverty and significant gaps in infrastructure. It therefore comes as no surprise that the government's priority investments are directed towards addressing the current infrastructure deficit that is considered the major binding constraint for socio-economic development. It is critical however that climate change impacts are duly addressed as to ensure that these foundational investments and associated services are durable in support of local development and long-term resilience.

Rural populations of Timor Leste are highly exposed to a number of hazards including flash floods, landslides, soil erosion, coastal flooding and drought, due to unfavourable terrain, socio-economic factors and intensification of these climate-induced hazards over time. In addition, anthropogenic factors such as poor, non-climate-resilient design and application of infrastructure construction standards and the limited investment in operation and maintenance, are exacerbating exposure and resulting in the failure of small-scale rural infrastructure, which is essential to the development of rural communities. Impacts include isolation of communities when roads and bridges are damaged by localized extreme events, contamination of unprotected water sources, reduction in yield of water supply sources due to droughts, flooding of communities due to inadequate or failing flood defences. In addition, the institutional and financial capacity of Local Administrations and communities to adapt to the situation is weak. This includes the ability of municipality planning officials, engineers and decision makers to identify areas that are critically vulnerable to climate hazards, to draw the links between ecosystems management and infrastructure development, and to identify, appraise, prioritize, design, cost and 'budget in' greater resilience measures. There is also a weak ability to understand and address gender and climate change related development and equity issues at local level.

Economy, employment and income

According to UNHDR 2019 Statistical Annex Timor Leste is 1.7 times below the average employment rate for developing countries and 1.9 times below the rate for the region. This trend is magnified when the gender disaggregate data is examined with the rate of employment among TL females being 2.5 times less than the regional average while males are 1.6 times below the rate of employment regionally. The working poor is 66.9% compared to the regional average of 23.8%. Youth unemployment is in line with the average for developing countries at 14.8%, but below the regional average of 18.6%, but this may mask the fact that a larger than average percentage of the potential Timor Leste work force is comprised of the youth (Population median age of 16.9 years). 50% of employment is in agriculture while 40% is in services.

An analysis was undertaken of demographics, employment and economic activity using the 2015 census data for the 6 municipalities.

On average, 41% of the population is younger than 15 years old, while 46% is of working age (17-60 years old) and 7% older than 65 years.

Table 5-1: Age demographics per municipality

Municipality	Age Group				
	0 - 14	15 - 64	65+	17-60	60+
% Male	39	55	6	48	8
% Female	39	55	5	49	8
Baucau					
% Male	40	53	7	45	10
% Female	38	54	8	46	11
Ermera					
% Male	43	53	5	46	7
% Female	41	54	4	47	7

Lautem					
% Male	45	49	6	41	8
% Female	41	51	8	44	10
Liquica					
% Male	40	54	6	48	9
% Female	38	55	6	49	9
Viqueque					
% Male	43	49	8	42	11
% Female	39	51	10	43	13
Average	41	53	7	46	9

On average 46% of working age people (53% male, 38% female) are employed while 53% are economically inactive (45% male and 60% female) (Table 5-2).

Table 5-2: Main economic activity by municipality

Municipality	Main economic activity		
	Employed	Unemployed	Economically Inactive
Aileu			
% Male	55	2	43
% Female	43	1	56
Baucau			
% Male	52	3	45
% Female	35	1	64
Ermera			
% Male	55	2	43
% Female	44	1	55
Lautem			
% Male	47	3	50
% Female	32	2	66
Liquica			
% Male	53	4	43
% Female	39	2	59
Viqueque			
% Male	55	2	44
% Female	38	1	61
Average	**46**	**2**	**53**
Average (Male)	53	2	45
Average (Female)	38	1	60

Table 5-3: Level of agricultural activity of households per municipality

Municipality	Level of Agricultural Activity		
	Only minor agriculture activity (backyard)	Producing mainly for home consumption with some sales	Producing mainly for sale with some home consumption
Aileu	46	51	2
Baucau	44	48	4
Ermera	59	36	2
Lautem	40	54	2
Liquica	60	33	4
Viqueque	39	56	2
Average	**48**	**46**	**3**

On average 48% of households are involved in backyard only agriculture, 46% produce mainly for home consumption with some sale, while 3% produce mainly for sale with some home consumption (Table 5-3).

Most households produce maize (82%), casava (77%) and sweet potato (69%) while approximately 60% produce vegetables, beans, fruit and coconut, 50% produce coffee, 40% timber, 36% rice and 25% others (Table 5-4). Many households rear chickens (87%) and pigs (85%), while 30% on average rear goats, cattle/cos and other (Table 5-5).

Table 5-4: Type of crops produced by households per municipality

Municipality	Type of crop produced											
	Rice	Maize	Cassava	Sweet potato	Vegetables	Beans	Coffee	Coconut	Fruit (perm)	Fruit (temp)	Timber trees	Others
Aileu	34.0	92.6	90.6	85.8	79.2	74.3	82.2	42.7	71.1	73.8	32.3	21.7
Baucau	54.9	77.9	65.9	62.4	46.5	44.3	24.0	63.6	51.3	51.7	36.8	22.7
Ermera	22.5	83.6	82.8	77.8	66.0	57.3	81.9	41.6	50.8	55.3	33.4	24.0
Lautem	28.9	80.1	65.3	54.8	39.4	50.9	18.2	67.2	51.8	49.1	42.9	19.2
Liquica	14.6	85.8	81.4	60.1	63.4	65.2	56.4	66.0	68.2	68.1	40.3	28.7
Viqueque	59.6	74.2	75.8	70.5	65.9	63.1	28.2	68.9	58.3	57.1	55.9	34.3
Average	**36**	**82**	**77**	**69**	**60**	**59**	**48**	**58**	**59**	**59**	**40**	**25**

Table 5-5: Types of livestock reared by households per municipality

Municipality	Type of livestock reared							
	Chickens	Pigs	Sheep	Goats	Cattle/Cows	Buffaloes	Horses	Other
Aileu	79.4	87.2	4.3	38.8	38.0	14.3	24.5	9.4
Baucau	89.4	87.4	15.8	32.2	11.4	17.2	25.3	21.3
Ermera	82.9	76.9	3.1	20.3	31.7	6.5	9.2	33.3
Lautem	88.8	86.3	4.9	15.6	36.0	23.3	19.0	15.5
Liquica	90.7	86.1	2.6	44.9	37.3	5.0	5.6	44.0
Viqueque	88.7	84.8	3.6	25.6	35.1	29.1	27.7	37.7
Average	**87**	**85**	**6**	**30**	**32**	**16**	**19**	**27**

Access to water supply

In the target municipalities, only 2% of households in Aileu, Baucau, Ermera and Liquica, and 3% in Lautem, have access to indoor piped of pumped water to their property. In Liquica 31% of households have access to outdoor piped or pumped water to their property, while as few as 4% in Lautem, 5% in Baucau, 6% in Viqueque and 13% in Aileu, have outdoor piped or pumped water to their property. In Aileu 53% households have access to public pipe/tap water, while the figure is 46% of Lautem, 44% of Ermera, 40% of Viqueque, 39% of Liquica and 37% of Baucau households. In the target municipalities 1-4% of households use tubewell/boreholes; 3-14% use protected well or spring while 3-16% use unprotected wells or springs and 11-28% use rivers, lakes or irrigation channels.

Table 5-6: Main sources drinking water (% of households)

Municipality	Main source of drinking water (% of households)										
	Piped or Pumped Indoors	Piped or Pumped Outdoors	Public Pipe/ Tap	Tubewell/ Borehole	Protected Well or Spring	Rainwater collection	Bottle water	Well or Spring (Not Protected)	Water vendors/ tank	River, Lake, Stream or Irrigation channel	Other
Aileu	2	13	53	1	3	0	0	4	0	24	1
Baucau	2	5	37	2	8	0	0	13	5	25	2
Ermera	2	16	44	1	4	0	0	6	0	24	3
Lautem	3	4	46	3	14	0	0	16	0	11	3
Liquica	2	31	39	3	3	0	1	3	2	15	1
Viqueque	3	6	40	4	8	0	0	8	0	28	2

In the target municipalities, only 3-5% of households have indoor bath/shower for their exclusive use and 2-4% of households have access to shared indoor bath/shower. By far the most common type of bathing facility is outdoor bath/shower for exclusive use with 64% of households in Aileu and Liquica, 54% of households in Lautem, 53% in Ermera and 37% in Baucau and Viqueque having such facilities. 9% to 17% of households have shared outdoor bath/showers while 9-41% of households use river/pond for bathing.

Table 5-7: Types of bathing facility (% of households)

Administrative Post, Suco	Type of bathing facility (% of households)					
	Indoor bath/shower (for exclusive use)	Indoor bath/ shower (shared)	Outdoor bath/ shower (for exclusive use)	Outdoor bath/shower (shared)	River pond etc	Other
Aileu	4	2	64	9	21	1
Baucau	4	3	37	11	37	8
Ermera	3	3	53	14	24	3
Lautem	5	3	54	16	14	8
Liquica	3	4	64	17	9	4
Viqueque	4	3	37	10	41	6

According to the recent data collected by Ministry of Health with the support of different organisations mainly UNICEF in 2022/2023, 3 out of the 6 target municipalities (Ailieu, Ermera and Liquica) are declared Open Defecation Free (ODF) and the remaining 3 (Baucau, Viqueque, Lautem) either have not reached the full ODF status or the full data is still not available. The Table below shows the ODF status of 38 water supply projects sites to be implemented by the Project.

Project Code	Project Title	Municipality	Funding Source	ODF status
A-WS-01	Construction of gravity-fed water supply system in suku Liurai of Remexio	Aileu	GCF	ODF
A-WS-02	Construction and installation of 2 km gravity-fed water supply system from Tataloko - Erluli in Fahisoi Lequidoe	Aileu	GCF	ODF
A-WS-03	Construction and installation of 3.5 km of water supply system in suku Lahae	Aileu	Co-financing	ODF
B-WS-01	Water supply system from Irabere to community in Suco namanei	Baucau	Co-financing	ODF
B-WS-02	Water Supply system to suco Laisorulai	Baucau	GCF	OD
B-WS-03	Water Supply system to aldeia uaimanaboe and uatobala, suco uailili	Baucau	GCF	OD
B-WS-04	Water Supply system to aldeia uailacama, suco vemase tasi	Baucau	GCF	OD
B-WS-05	Water supply system to daruisi, suco guruca	Baucau	Co-financing	OD
B-WS-06	Water supply system to aldeia ailita	Baucau	Co-financing	ODF
B-WS-07	Water Supply system to wawakasa and suco larisula	Baucau	Co-financing	ODF
B-WS-08	Rehabilitation of water supply system in suco vemase tasi	Baucau	Co-financing	OD
B-WS-09	Rehabilitation of water source and canalize to community in suco afaca	Baucau	Co-financing	OD
E-WS-01	Construction of water supply system in suku Estado	Ermera	GCF	ODF
E-WS-02	Construction of water supply system 4 km of aldeia Ilat, suku Baboe Leten	Ermera	Co-financing	ODF
E-WS-03	Construction of water supply system in Baboe craik	Ermera	Co-financing	ODF
E-WS-04	Construction of water supply system in Lauana	Ermera	GCF	ODF
E-WS-05	Construction of water supply system in Letefoho Vila	Liquica	GCF	ODF

E-WS-06	Construction of water supply system in Hatuletan	Ermera	GCF	ODF
La-WS-01	Construction of water supply system in mafuro	Lautem	Co-financing	ODF
La-WS-02	Construction of water supply system in Dilno	Lautem	Co-financing	ODF
La-WS-03	Construction of water supply System in Suco Bauro	Lautem	GCF	ODF
La-WS-04	Rehabilitation of water supply (water pump) system in suco souro	Lautem	GCF	ODF
La-WS-05	Extension of water supply system (water pump installation) suco Maina 1	Lautem	Co-financing	ODF
La-WS-06	Construction of water supply system (drilling) in Suco Daudere	Lautem	GCF	ODF
La-WS-07	Water supplay system in suco muapitine	Lautem	GCF	OD
La-WS-08	Construction of water supply system (drilling) in Convention Centre Lautem	Lautem	GCF	OD
La-WS-09	Extension of water supply system (Water Pump installation) in Caiwaca	Lautem	Co-financing	ODF
La-WS-10	Construction of water supply system (drilling) in Suco Omucano	Lautem	GCF	ODF
La-WS-11	Construction of Water Supply System in Serelau, Lautem	Lautem	GCF	ODF
L-WS-01	Construction of gravity-fed water supply system in Fatumasi	Liquica	Co-financing	ODF
L-WS-02	Construction of gravity-fed water supply system in Lauhata	Liquica	Co-financing	ODF
L-WS-03	Construction of gravity-fed water supply system in Guico	Liquica	GCF	ODF
V-WS-01	Extension of water supply system (water pump installation) in irabere	Viqueque	Co-financing	Data not available
V-WS-02	Construction of water supply system in bahaneo liaruka	Viqueque	Co-financing	Data not available
V-WS-03	Construction of water supply system (drilling) in Suco uma uain leten	Viqueque	GCF	Data not available
V-WS-04	Construction of water supply system in luhan raikuak	Viqueque	Co-financing	Data not available
V-WS-05	Construction of water supply system (drilling) in Suco Raitahu	Viqueque	GCF	Data not available
V-WS-06	Construction of water supply sytem in ossu decima	Viqueque	GCF	Data not available

As per above Table based on the recent data from MoH and UNICEF, 24 out of 38 project sites are ODF while remaining are not yet ODF or full data is not available.

Gender

UNDP's Gender Development Index[13], based on the sex-disaggregated Human Development Index, defined as a ratio of the female to the male HDI, measures gender inequalities in achievement in three basic dimensions of human development: health (measured by female and male life expectancy at birth), education (measured by female and male expected years of schooling for children and mean years for adults aged 25 years and older); and command over economic resources (measured by female and male estimated GNI per capita). The 2019 female HDI value for Timor-Leste is 0.587 in contrast with 0.623 for males, resulting in a GDI value of 0.942.

The Gender Inequality Index (GII), reflects gender-based inequalities in three dimensions – reproductive health, empowerment, and economic activity. Reproductive health is measured by maternal mortality and adolescent birth rates; empowerment is measured by the share of parliamentary seats held by women and attainment in secondary and higher education by each gender; and economic activity is measured by the labour market participation rate for women and men. The GII can be interpreted as the loss in human development due to inequality between female and male achievements in the three GII dimensions. Due to a lack of relevant data, the GII has not been calculated for Timor Leste.

[13] https://hdr.undp.org/data-center/documentation-and-downloads

In rural Timor-Leste, the burden of agricultural work, crop harvesting and caring for home gardens is generally shared between men and women. However, domestic responsibilities such as child-rearing, cooking, cleaning and overall family wellbeing, reflects traditional gender roles. This implies that women's vulnerabilities to climate change and disaster, while similar to men, include specific additional concerns such as:

- Access to water and firewood;
- destruction of and damage to the home gardens;
- damage to seeds;
- hindered access to markets and hence sale of products/ generation of cash;
- diseases and access to clinics; and
- closing of schools.
- Post-disaster health care

In Timor-Leste, women are often excluded from certain activities due to customary norms or lack of capital and ownership arrangements that confer all rights to men in the family. Women hold very few leadership positions within the districts. In cases where women do participate in local level planning, they are in the minority. An important aspect of gender mainstreaming in Timor-Leste is therefore to increase involvement of women in formal and informal decision-making processes.

Timorese women continue to experience high levels of violence, despite the ratification of the Convention on the Elimination of Discrimination against Women in 2003 and other legislation which aims to protect women from gender-based violence (GBV). In Timor-Leste, GBV is the largest category of crimes reported to police, with 59% of ever-partnered women aged 15-19 experiencing intimate partner violence at least once in their lifetime.

In the 6 project target municipalities, on average, there are 3% of female-headed households (Table 5-8) and 40% fewer females than males are in employment and 30% more females than males are economically inactive (Table 5-2).

Table 5-8: Total households and % female-headed households per municipality

Municipality	Total Households	Female headed households	% Female headed households
Aileu	7598	1009	2
Baucau	22976	4127	4
Ermera	20671	3255	2
Lautem	12050	3007	2
Liquica	11885	1566	4
Viqueque	15297	2809	2
Average	15080	2629	3

Youth

The population of Timor-Leste is one of the youngest in the Asia and Pacific region. The median age is 17.4 years, and the country is the 15th youngest in the world.

The annual population growth rates have been high since independence, 2.6 percent between 2010 and 2015. Timor-Leste is the most rapidly growing country in Southeast Asia and one of the most rapidly growing countries in the world. While 39 percent of the population is below the age of 15, a small share—6 percent—is over age 65. Every country experiences a demographic transition as mortality

and fertility rates decline, leading to changes in the population age structure. The population age structure is particularly important for economic and human development because it determines the dependency ratio, that is, the ratio of the non-working population, typically ages 0–14 and 65 or above, to the working population, ages 15–64, and, thus, the prospects for a demographic window of opportunity and a demographic dividend.

Because of declining birth rates and decreasing mortality rates among children ages 0–14, Timor-Leste is now engaged in a demographic transition. If appropriate policies and strategic investments are realized by policymakers today, particularly for the benefit of youth, Timor-Leste may enjoy the positive outcomes of a demographic dividend. The Government aspires for the country to reach upper-middle-income status, with a healthy, well-educated and prosperous population, by 2030 (Planning Commission 2011).

In Timor-Leste, young school-leavers generally prefer employment in the public or private sector, but the opportunities for such jobs are limited. Meanwhile, agriculture is viewed as a last resort. These attitudes need to shift to open up new opportunities, not only to engage youth in economically productive activities, but to contribute to rural development in a country that is principally dependent on agriculture for livelihoods.

Indigenous People

The population in Timor-Leste mainly consists of East Timorese and a small fraction of people who are not ethnically East Timorese. The population is both multi-ethnic and multilingual, with 20 individual languages in use (19 indigenous languages and one non-indigenous)

Ethnic groups fall into two main categories of origin: Malayo-Polynesian and Papuan origin. The ethnic groups of Malayo-Polynesian origin include Austronesian (Malayo-Polynesian) includes Tetun, Mambai, Tokodede, Galoli, Kemak, Baikeno. The Melanesian-Papuan includes Bunak, Fataluku, Makasae and there is also a small Chinese minority. The lingua franca and national language of Timor-Leste is Tetum, with which it has equal status as an official language. The Tetum (100,000) are the largest Malayo-Polynesian group and are mainly found around the capital, Dili, and the north coast. The largest ethnic group of Papuan origin are the Bunak (85,000), Fataluku (45,000) the Makasae (75,000).

6 Environmental and social risks, impacts and mitigation measures

6.1 Introduction

The sub-projects have been screened, environmental and social impact assessments undertaken, and environmental and social risks and impacts identified.

The **environmental risks** associated with the sub-project are assessed as **Moderate**, with mainly short-term, temporary, predictable, negative impacts that can be readily mitigated, and overall significant long-term positive impacts.

The **social risks** associated with the sub-project are assessed as **Moderate**, with mainly predictable short-term negative impacts that can be readily mitigated. Social risks include potential to impact cultural heritage/sacred sites during construction, potential conflict associated with land tenure and potential for exclusion of, or adverse impacts to, women and vulnerable groups.

6.2 Positive Impacts

Overall, the **positive/beneficial impacts** of the sub-project far outweigh the temporary and short term environmental and social impacts that will result. Benefits that the sub-project will bring include:

- **Increased water supply** for domestic and hygiene use and consumption;
- **Improvements in health.** Improved hygiene conditions and standards among targeted project communities; cost savings in health care due to reduction in treatments for waterborne diseases; reduced health care expenditure for seeking treatment of waterborne diseases from private providers; reduced non-health-related costs for visits to health facility, such as transport, etc.; avoided productive work days loss.
- **Improved school enrolment and attendance**, especially of girls who spend long hours to collect water; Avoided days of school absenteeism due to lack of water for period hygiene for girls; opportunity costs of caring for a sick a sic child
- **Improved environmental conditions** and water management systems, through the implementation of erosion, landslide and drought risk reduction measures; Improved water quality e.g. provided by source protection leading to improved biodiversity.
- **Improved standards of living.** Reduced and/or saved time for water collection (per household); cost savings due to switching from more expensive/alternative water sources; incremental benefits from additional consumption of water, increased economic and livelihood activities as well as savings from health and water purchases;
- **Reduced resource use conflicts** especially between those close to water sources and those further away;
- **Employment opportunities/Income generation -** The sub-project will contribute to increase in local development and employment as the local populations are likely to be employed during the construction phase. It is also anticipated that indirect employment opportunities will be created within local communities through the provision of services to the construction teams, such as the sale of food and beverages, transportation services for different material to and from the construction sites. Increase in number of employment related to the sector and its ancillary services (e.g. O&M);
- **Local Economic development –** Increased potential for private sector income generating economic activity leading to growth in number of small and medium-sized enterprises in the project area.
- **Improved participation of women and youth.** The sub-project will include eligibility and selection criteria that enables more women and youth to participate, and also provide support to improve women and youth access to knowledge, inputs, and skills during the project. With 20% female headed beneficiary households, the project will enhance and catalyse women and young people's participation in economic activity, through promotion

of gender and youth engagement. The sub-project provides a stimulus for women and youth to become more active in employment generation activities.

- **Sustainability.** Improved reliability of water supply from sustainable climate proofed water sources, will potentially result in increased home kitchen gardens for household food production and greater opportunities for participation in economic activity.
- Increased **food and nutrition security resulting from increase in home kitchen gardens and improved food hygiene**;
- Increase in **land value** within the project area, due to availability of domestic water supply.
- **Community project governance**. The sub-proposed project will involve the community and the local stakeholders throughout the project cycle equipping them with management skills in implementation and management of water supply infrastructure projects. The sub-project will present the local stakeholders with a learning opportunity on community water supply governance practices, such as: efficient water management, transparency, management of grievances, accountability and record keeping among others.

6.3 Adverse Impacts

The anticipated impacts during construction and operation phases could include:

- ***Construction***
    - disturbance/loss of vegetation at work sites which could lead to loss of some indigenous vegetation and could also affect habitats of important fauna;
    - potential for erosion and sedimentation;
    - potential contamination during construction from improper handling of waste and machinery;
    - public nuisance during construction e.g. noise, vibration, dust,
    - worker and public safety i.e. risk or injury during construction and maintenance;
    - risk of pollution to surface and groundwater sources during construction.

- During ***operation*** of the water supply scheme, the following potential negative impacts may arise:
    - increased water-borne disease from contamination of water sources;
    - possible depletion/drying up of the water source (due to climate change),
    - possibility of sediment-laden flood water entering the water supply system during high flow events, clogging the system;
    - possible adverse health effects due to low quality water,
    - possible pollution of water source due to farming activities on surrounding land,
    - possible pollution due to human activities viz: open defecation, deforestation, overstocking of livestock.

***Environmental Risks and Impacts*:** The material threats to the protection, conservation, maintenance and rehabilitation of natural habitats, biodiversity, and ecosystems; those related to climate change and other transboundary or global impacts; those related to community health and safety; those related to pollution and discharges of waste; those related to the use of living natural resources, such as fisheries and forests; and those related to other applicable standards have been identified.

***Social Risk and Impacts*:** Sub-Project-related threats to human rights of affected communities and individuals; threats to human; risks of gender discrimination; risks that adverse project impacts fall disproportionately on disadvantaged or marginalized groups; any prejudice or discrimination toward individuals or groups in providing access to development resources and sub-project benefits, particularly in the case of disadvantaged or marginalized groups; negative economic and social impacts; impacts on the health, safety and well-being of workers and sub-project-affected communities; and risks to cultural heritage have been identified.

Sub-project activities will include stabilization of slopes through appropriate bio-engineering measures such as gabion wall protection in combination with plantation of slopes with bio-engineering material like Vetiver grass for erosion control, climate proofing of water source area to include tree planting to protect the water source quality and quantity and ensure longer term supply especially during dry season. These measures will address the long term erosion and landslide risks in the sloping rural environment associated with the project areas. In addition catchment management measures being implemented by the project (Activity 2.3) will safeguard against erosion and landslides of the wider catchment area.

Relevant mitigation/control actions are elaborated below

6.4 Environmental risks - management measures

6.4.1 Ecology – flora and fauna

In the areas where the pipeline will be laid underground along the route, vegetation clearing and excavation will occur. Once the pipeline is established there must not be trees within 1m radius from the pipeline to protect the pipeline and this means that there will be shorter and seasonal vegetation along the pipeline route.

The proposed water supply sub-project works will not significantly change land use within the sub-project area, however the sub-project will aim to minimise changes in the vegetation of the wider area beyond the sub-project footprint.

Some vegetation will be disturbed for the construction of the intake structure and at river crossings where pipe bridges will be constructed which will lead to the temporary loss of vegetation and has the potential for permanent loss of important plant species if not properly managed. Earth works activities which will include minor excavation and excavation for pipe laying, will be implemented to ensure that they do not encroach beyond the permitted area and will use manual methods to ensure that existing trees are retained as far as possible. Following clearance, efforts to revegetate the area could result in the introduction of new and potentially invasive species if not carefully managed. The clearance of vegetation will increase the risk of erosion of exposed soil, sedimentation of water courses and could increase risk of dust in the air.

There is a risk of degradation of habitat quality due to construction activities and construction camps, and presence of workers which could impact wildlife as well as domesticated animals. Noise generated due to construction and transport could disrupt communication systems of fauna. Lighting from the vehicles during their movements could result in behavioural change, collision of animals and road kills. Fragmentation to important habitat areas may reduce home range and cause isolation of wildlife species. These impacts could result in decline in wildlife population, their flow and movement. Injury and accidents could lead to mortality of animals. Reduced access to breeding sites and nesting habitats of birds could result.

The sub-project will plant trees and grass (vetiver) as part of bio-engineering interventions. Trees have been identified for their ability to hold soil together and prevent landslides. Clearing of light vegetation for the operation of equipment and temporary storage of materials, will be completed using labour-based methods.

The following mitigation and management measures have been identified to further avoid and reduce the impacts of the above risks.

Vegetation clearance

- Vegetation on the sub-project site and adjacent area preserved as far as possible;
- Boundaries of operation areas and traffic routes strictly observed during construction;
- Protected species, if discovered on sub-project site, removed from the environment in accordance with relevant international conventions;

- Use of labour-based methods which preserve environment, based on a knowledge of important species, and where possible by only reducing the height of trees rather than complete removal (such as uprooting)
- Keep clearing to a minimum and only what is necessary
- Compliance with good practice of waste management ensured;
- Use temporary fencing protection for root critical zone of the trees that might be accidentally disturbed during construction by off-site and on-site traffic;
- Vegetation to be removed is clearly marked using paint or flagging tape;
- Revegetation of disturbed sites after completion of works, ensuring that no invasive species are introduced in the process;
- During revegetation do not include trees along the pipeline route with a 1m radius. Revegetate with shorter and seasonal vegetation which will not impact the pipeline.
- Other dust, soil and water impact mitigation measures implemented;
- Staff trained/briefed in, and aware of, construction best practice.

Biodiversity and habitat conservation and protection

The sub-project is not within any areas that are protected for their biodiversity or sensitivity. According to IUCN red list, Timorese Horseshoe Bat (Rhinolophus montanus) is the only endangered species which is nocturnal and mainly lives in sheltered places. As the water supply schemes are being constructed in open space no impact is expected on this species. The project will ensure the following biodiversity safeguards:

- Ensure work is done during dry season, if possible, to minimise impacts on river and streams.
- Ensure no wild animals or endangered species are affected by the proposed works.
- Tree and vegetation habitat protection - Minimizing loss of trees and other vegetation;
- Measures for mitigation of impact on soil, water, air and vegetation, noise and waste management/reduction implemented;
- Habitat disturbance minimised through adequate protection and management of retained vegetation;
- Works scheduled with consideration of period sensitive for fauna species (birds, fish, amphibians in particular); Trees checked for presence of bat roosting places;
- No harm policy implemented;
- Trenches or pits that might be required during construction fenced/protected to avoid entrapping and injuries of the fauna species;
- Upon completion of the shift, planks or medium size twigs left in trenches to allow animals to escape in case entrapped despite precautions mentioned above. Pits/trenches checked prior to filling up;
- Disturbed areas revegetated using native and locally endemic species that have high habitat value;
- Poaching prohibited;
- Use directed light (wherever required) to avoid impact on avian fauna;
- All personnel aware of sensitive fauna/habitat areas and the requirements for the protection of these areas;

6.4.2 Water Quality and quantity

6.4.2.1 Water Quality

Direct risks to water quality may result from pollution of sources as well as changes to the hydrological regime of surface and sub-surface flows. Increased frequency and intensity of flood flows due to climate change could result in increase of E. Coli and thermotolerant coliform contamination in boreholes, piped schemes, and rainwater harvesting systems; increased surface runoff that carries fecal matter from soil and latrines into surface and groundwater sources; contamination of groundwater sources from sanitation containment units via underground pathways through soil or aquifers; increased agitation of the layer of sludge at the bottom of rainwater harvesting containers which causes pathogens to be suspended from the sludge into the water column.

Pollution of surface and groundwater as a result of construction works could occur from spillages and leaks from construction equipment and vehicles, site waste and waste water, materials and stockpiled waste, and wash from disturbed and/or polluted soils. Contamination of spring water may also occur due to cracks in the seal, human activities that promote pollution, and animal activity. Erosion and/or collapse of spring box could be caused by large surface runoff flows and animal trampling. The effects of sheet erosion on loose soil if left unattended could trigger a host of negative impacts on water quality, levels and the capacity of sources.

In periods of drought diminished groundwater recharge, combined with over-abstraction could lead to salinization of groundwater sources.

Water source quality protection
If the water supply source is a well, drainage should be away from the well. The casings of the well should be sealed with grout or some other mastic material to ensure that surface water does not seep along the well casing to the water source. The seal grouting should be reinforced with steel and a drain away from the casing provided to assist in protecting the water source. A minimum of 3m of soil is essential to filter unwanted biological organisms from the water source. However, if the area of well construction has any sources of chemical contamination nearby, the local public health authority should be contacted. In areas with karst topography (areas characterized by a limestone landscape with caves, fissures, and underground streams), wells of any type are a health risk because of the long distances that both chemical and biological contaminants can travel.

In determining where a water well is to be located, several factors should be considered:

- the groundwater aquifer to be developed,
- depth of the water-bearing formations,
- the type of rock formations that will be encountered,
- freedom from flooding, and
- relation to existing or potential sources of contamination.

The overriding concern is to protect any kind of well from pollution, primarily bacterial contamination. Groundwater found in sand, clay, and gravel formations is more likely to be safer than groundwater extracted from limestone and other fractured rock formations. Whatever the strata, wells should be protected from:

- surface water entering directly into the top of the well,
- groundwater entering below ground level without filtering through at least 3m of earth, and
- surface water entering the space between the well casing and surrounding soil.

Also, a well should be located in such a way that it is accessible for maintenance, inspection, and pump or pipe replacement when necessary. Driven wells are typically installed in sand or soil and do not penetrate base rock. They are, as a result, hammered into the ground and are quite shallow, resulting in frequent contamination by both chemical and bacterial sources.

If the source of water is a natural spring, which is groundwater that has reached the surface because of the natural contours of the land, while it may provide an ample supply of water, it is likely to provide water only seasonally. Without proper precautions, the water may be biologically or chemically contaminated and not considered potable.

To ensure satisfactory (potable) water from a spring, it is necessary to eliminate surface water outcroppings above the spring to its source, prevent animals from accessing the spring area, and provide continuous chlorination. It is essential to ensure that the spring box is watertight, and surface water runoff is diverted away from the area. Also be aware that the water quality of a spring can change rapidly.

Backflow
In addition to contamination at its source, water can become contaminated with biological materials and toxic construction or unsuitable joint materials as it flows through the water distribution system. Water flowing backwards (backflow) in the pipes sucks materials back (back-siphonage) into the water distribution system, creating equally hazardous conditions. Other water quality problems relate to hardness, dissolved iron and iron bacteria, acidity, turbidity, colour, odour, and taste. Backflow may be caused by numerous factors and conditions. For example, the reverse pressure gradient may be a result of either a loss of pressure in the supply main (back-siphonage) or the flow from a pressurized system through an unprotected cross-connection (back-pressure). A reverse flow in a distribution main can be created by a change of system pressure wherein the pressure at the supply point becomes lower than the pressure at the point of use. When this happens, the water at the point of use will be siphoned back into the system, potentially polluting or contaminating it. It is also possible that contaminated or polluted water could continue to backflow into the distribution system.

6.4.2.2 Water Quantity

Direct effects on water quantity may include reduction in downstream river flow due to water storage in the water supply system and changes to natural surface and groundwater flows downstream of the scheme.

Decreased flows may occur due to clogged collection/source capture system caused by siltation and plant roots, spring drying up, blocked supply pipe, leakage or bypass, or a silted spring box. These are likely to occur in the operation phase of the project and will need to be addressed by regular maintenance of the system which should include siltation management of source capture/collection structure, cleaning pipes, ensure pipes are laid at 2 degrees gradient, and vegetation management at sources and along the distribution pipeline route.

An important risk with regard to water quantity which should be considered during the design is that arising from changes in the availability of water at the sources due to climate change which could lead to accelerated depletion of the water source.

In order to avoid or mitigate impact, **construction** works should be performed with due consideration of the following environmental risk mitigation and management measures:

- Most of the sensitive works which could impact water quality or quantity will be mainly implemented during the dry season of August to October, so as to avoid potential risks to water quality and damages and loss during the rainy season.
- Avoid discharge of water on to unstable slopes.
- Discharge of storm-water run-off from construction areas over a vegetated surface (i.e. bio-engineering) to trap sediments
- Staff trained in small spill response measures;
- Onsite repairs /maintenance and fuelling activities avoided.
- On-site vehicles and equipment inspected regularly for leaks; immediate repair of damages;
- Incoming vehicles and equipment checked for leaks. (Leaking vehicles/equipment shall not be allowed on-site);
- Washing of the vehicles on site prohibited;
- Provision of mobile toilets advisable;
- Untreated effluents discharge into the environment banned;
- Discharge of cement contaminated water avoided as cement pollution results in high alkalinity and raises the pH, which can be toxic to aquatic life;
- Materials and waste stockpiled so as to avoid erosion and washing off into watercourses;
- Waste removed from the site regularly, the sites kept clean and tidy;
- Blockage of the sources and streams avoided through proper management of material/waste;

- Waste collection area sited so as to avoid receiving a substantial amount of runoff from upland areas and draining directly to a water body;
- In disturbed soil areas sediment control measures implemented;
- Construction equipment removed from proximity to the riverine environment at the end of each working day or if heavy rainfall is predicted;
- Discharge of sediment-laden construction water (e.g., from areas containing dredged soil) directly into surface watercourses prohibited. (Sediment laden construction water will be discharged into settling lagoons or tanks prior to final discharge);
- For all sources (including wells and springs), test the water for bacteriologic quality with several samples taken over a period of time to establish a history of water quality at the source. With few exceptions, surface water and groundwater sources should always be presumed to be bacteriologically unsafe and, as a minimum, must be disinfected.
- Ensure water chemical quality, including both legal (primary drinking water) standards and aesthetic (secondary) standards are met.
- Determine the economical and technical restraints (e.g., cost of equipment, operation and maintenance costs, cost of alternative sources, availability of power) and treat if necessary and feasible.
- Staff trained/briefed in and aware of construction best practice.
- Should any temporary fuel tank be required onsite, it must be located within at least 100m from the riverbed. The tank must be placed in covered areas with berms or dikes installed to intercept spills, if any. Any spill should be immediately intercepted and cleaned up with absorbent materials;
- If case emergency repair is required, any spill of oil/lubricant material must be adequately addressed without delay. If feasible, fuelling/maintenance must be carried away from drainage channels and surface water bodies. (Distance between the maintenance site and any river/water course should be at least 100m). Secondary containment devices (drop cloths, drain pans) shall be used to catch leaks or spills, absorbent materials must be used.

During **operation** the following risk management and mitigation measures are required:

- Efficient use of water supply systems should be practiced to avoid water loss and to control vector breeding and water related diseases.
- Training of the community and O&M personnel in water management of the water supply schemes.
- Ongoing economic evaluation of water consumption requirements and utilization to ensure continued efficiency of the water supply schemes to meet (changing) needs.
- Regular water quality monitoring. For all sources (including wells and springs), test the water for bacteriologic quality with several samples taken over a period of time to establish a history of water quality at the source. With few exceptions, surface water and groundwater sources should always be presumed to be bacteriologically unsafe and, as a minimum, must be disinfected.
- Ensure water chemical quality, including both legal (primary drinking water) standards and aesthetic (secondary) standards are met.
- Determine the economical and technical restraints (e.g., cost of equipment, operation and maintenance costs, cost of alternative sources, availability of power) and treat if necessary and feasible.
- Empowerment and awareness raising of local communities - Awareness of hygienic handling of water and on household water treatment/purification methods should be introduced
- Regular discharge quantity monitoring

Groundwater quality protection

- Periodically inspect exposed parts of wells for cracked, corroded, or damaged well casings; broken or missing well caps; and settling and cracking of surface seals.
- Slope the area around wells to drain surface runoff away from the well.
- Install a well cap or sanitary seal to prevent unauthorized use of, or entry into, a well.
- Disinfect wells at least once a year according to the manufacturer's directions.
- Have wells tested once a year for coliform bacteria, nitrates, and other constituents of concern.
- Keep accurate records of any well maintenance, such as disinfection or sediment removal, that require the use of chemicals in the well.
- Hire a certified well driller for new well construction, modification, or abandonment and closure.
- Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels, and other pollutants near wells.
- Do not dispose of waste in dry or abandoned wells.
- Do not cut off well casings below the land surface.
- Never dispose of hazardous materials near a well.
- Define/differentiate at least three type of source protection zones: the *wellhead protection zone* (zone I), *inner protection zone* (zone II), and *outer protection zone* (zone III). In the simplest case, these zones are arranged in succession around a groundwater pumping well or up-gradient from a tapped spring. Implement relevant restrictions within each zone.
    - Zone I - is usually fenced and all activities not directly related to drinking water supply are forbidden. Artificial recharge facilities and swallow holes in karst areas are also often included into this zone.
    - Zone II - Activities releasing microbial contaminants, such as the application of manure, are prohibited in zone II; other types of polluting land-use practices and construction works that might obstruct groundwater flow are also restricted.
    - Zone III – This zone either comprises the entire catchment area of a spring or pumping well or is delineated on the basis of distance or travel time. Facilities that pose a substantial threat to groundwater, such as fuel stations or wastewater seepage, are not allowed in this zone.

O&M requirements for ground water sources

Activity	Frequency	Human resources	Materials & spare parts	Tools & equipment
Clean spring surroundings	Weekly	Local		Broom, bucket, hoe, machete
Check colour (turbidity)	After each flood	Local		
Check water quantity	Periodically	Local		Bucket, watch
Repair fence and clean surface drains	Periodically	Local	Wood, rope, wire	Machete, axe, knife, hoe, spade, pick axe
Check water quality	Regularly	District	Laboratory reagents	Laboratory equipment
Wash and disinfect spring	Annually	Local	Chlorine	Bucket, wrench, brush
Repair piping and valves	Periodically	Local or district	Spare pipes and valves, cement, sand, gravel	Bucket, trowel, wrench, flat spanners
Repair cracks	Annually	Local	Cement, sand. Gravel, day	Bucket, trowel, hoe, spade, wheel barrow

6.4.3 Air Quality

The sub-project areas are predominantly village or rural in character. Existing air quality reflects those environments, with dust being the main air quality nuisance. The proposed sub-project is not expected

to contribute significantly to air pollution and as such long-term adverse impacts to air quality are not anticipated. None the less, all construction activities have the potential to cause air quality nuisance.

Workers involved in construction and operation activities should be familiar with methods for minimising the impacts of deleterious air quality and alternative construction procedures as contained in Timor Leste legislation or good international industry practice. Mitigation measures should include:

- Restricting active construction activities to not more than a total of 500 meters sections at a time to minimize dust as far as practicable.
- Use of labour-based methods
- Provide masks for the workers and communities.
- Dampen/spray all unpaved roads and significant areas of uncovered soil with water at regular intervals (as required) on working days, during dry and windy weather;
- Cover loose material (if any), with tarpaulins when transported to or off-site on trucks;
- Proper maintenance of vehicles and machinery to minimise emissions;
- Optimum speed while moving through the communities set to reduce dust emissions;
- Prohibit leaving vehicles with the engine idling;
- Staff trained/briefed in, and aware of, construction best practice.

6.4.4 Noise and Vibration

Due to limited urban development and heavy industry, existing background environmental noise is relatively low. Whilst construction equipment and increased traffic may cause some noise, nearby schools, clinic, community houses and other public facilities will not be significantly impacted because the level of noise generated will be short-term and not severe, particularly as most of the works will be carried out by laborers using labour-based techniques, with equipment such as trucks being mobilized only when required during specific phases in the construction.

All construction and operation activities have the potential to cause noise nuisance. The use of machinery or introduction of noise generating facilities could have an adverse effect on the environment and residents if not appropriately managed. Potential noise sources during construction may include:

- heavy construction machinery;
- power tools and compressors;
- delivery vehicles.

Noise from vehicles is a concern in the areas around the sub-project area as traffic from construction vehicles will increase. In addition, power tools and plant equipment will increase noise levels. There is no criterion for road traffic noise in Timor-Leste. The UNTAET guideline on ambient noise was introduced in 2002. The Timor-Leste ambient noise standard is Leq55dB(A) for residential sensitive receivers and is the same as for World Bank. Where the background exceeds the ambient standards the criterion is background +3dB(A).

Vibration disturbance to nearby residents and sensitive habitats is likely to be caused through the use of vibrating equipment. Blasting is not required to be undertaken as part of the sub-project.

Contractors involved in construction activities should be familiar with methods of controlling noisy machines and alternative construction procedures as contained within specific TIMOR LESTE legislation or in its absence, good international industry practice may be used if the legislation has not been enacted. The detailed, typical equipment sound power levels, provides advice on sub-project supervision and gives guidance on noise reduction.

Mitigation measures should include:

- Restrictions on working hours on weekdays, weekends or public holidays set and complied with, no night-time working allowed;
- Allowable noise level must not be violated (which is Leq55dB(A))
- Issue protective equipment to onsite employees and those operating heavy machine and power tools
- Install silencers and mufflers as appropriate to site plant and equipment
- Optimum travel speed during offsite travel set and complied with;
- Travel speed in residential areas reduced to reduce vibration
- Temporary noise barriers (whether appropriate) installed;
- Vegetation preserved (that can act as a natural noise barrier);
- Prohibit leaving vehicles with the engine idling;
- Complaints registers and record of response measures provided available;
- Staff trained/briefed in and aware of construction best practice.

6.4.5 Erosion, drainage and sediment control

The sub-project sites are located in an area which is at medium to high risk of soil erosion and landslides. Very wet conditions may trigger slope failures, and in many areas, construction is feasible only during the dry season. Landslides and erosion are two of the most common environmental risks in the project area, resulting from interactions between water flow and soil. The water supply pipe route may pass along sloping areas and small stream crossings due to the hilly and steeply sloping sections along the route.

Erosion, drainage and sediment control is therefore critical to reducing the associated environmental risks. A key erosion risk during the construction and operation of the scheme comes from lateral slope erosion which could occur from runoff, erosion of the water source area and erosion at river crossings are also risks. In addition, there is potential for erosion trenching and other earth works but its duration is limited to the construction phase only, the spatial scale is limited to the pipeline route, and the impact can easily be mitigated. The soil will be used to cover the pipes once the laying process has been completed. It is recommended that this is done immediately to avoid having mounds of soils lying around.

The works will include climate proofing approaches that have been adopted by the sub-project to ensure that these issues are addressed and factored into the design and construction. They include spring source with gabion wall protection and combination with soil bioengineering on the vetiver grass planting and tree planting to reduce the erosion and landslide during rainy time. All steep slopes/gradients along the route are provided with bioengineering measures to safeguard against erosion.

The following additional mitigation measures have been identified for erosion drainage and sediment control during construction:

Erosion and Sediment Control

- Vegetation on the project site and adjacent area preserved;
- Site revegetated after completion of construction works;
- Slope stabilisation provided - slope drainage, contour drainage trenches (where required);
- Erosion and sediment control devices installed, inspected and maintained as required;
- Works scheduled/staged to minimise cleared areas and exposed soils at all times;
- Major vegetation disturbance and earthworks are carried out during periods of lower rainfall and wind speeds;
- Use mulching to provide adequate vegetation for erosion protection on slopes prior to harsh weather conditions, at sites with surface erosion, daily temperature fluctuations,

lack of available moisture, acidic soils, lack of nutrients, and lack of organic material and to supplement other erosion control treatments such as seeding and soil bioengineering. Use soil stabilizers to tack mulches on hard to reach areas and increase mulch durability.

- Stormwater management measures to reduce flow velocities and avoid concentrating runoff designed and implemented;
- Silt curtain installed to protect from increased sediment loads;
- Ground clearance minimized;
- Topsoil removed from all areas required for permanent and temporary needs of the project, stored separately from subsoil;
- Stockpiles of removed topsoil and subsoil properly designed and managed - the piles must be placed and managed so as to avoid erosion and washing off. Stockpile storage areas located away from erosion sensitive locations. Drainage trenches around the piles must be provided.
- Soil compaction reduced by strictly keeping to temporary roads (if required) and operation ground boundaries;
- Disturbed vegetation replanted immediately after the construction/disturbance stops;

Drainage Control
Consider backwash prevention measures.

6.4.6 Waste Management

Various wastes will be produced throughout the construction process. The main waste producing areas will be construction sites and construction camps (in case of existence). Small amounts of waste are expected along the access and heavy equipment movement routes with ground and soil pollution.

The following types of waste will be produced during construction activities:

- Inert construction waste – cement and concrete residue, loose and debris, stones and gravel, wood etc.
- Excavation waste unsuitable for re-use during earthworks;
- Small amount of hazardous waste – from cleaning, repairing and maintenance of the equipment, polluted soil and water from leakage or spillage of fuels/oils, polluted rags and oil absorbing fabric, polluted personal safety equipment and clothing;
- Non-hazardous waste - paper, glass, plastic and biodegradable waste;
- Sewage - generated through the use of workers' facilities such as toilets.

The preferred waste management hierarchy and principles for achieving good waste management is as follows:

- waste avoidance (avoid using unnecessary material on the projects);
- waste re-use (re-use material and reduce disposing);
- waste recycling (recycle material such as cans, bottles, etc.); and
- waste disposal (all putrescible and/or contaminated waste to be dumped at approved landfills).

Workers involved in construction and operational activities should be familiar with methods minimising the impacts of clearing vegetation to minimise the footprint to that essential for the works and rehabilitate disturbed areas. By doing these activities, the projects should minimise the impact of waste generated by the sub-project.

Waste will be collected and removed from the work camps and disposed in waste disposal areas; Segregation of hazardous wastes (oily wastes, used batteries, fuel drums) to ensure that storage, transport, and disposal shall not cause pollution, consistent with national regulations.

- On-site vehicles and equipment will be inspected regularly for leaks. All leaks/damages immediately repaired.
- Incoming vehicles and equipment will be checked for leaks. Leaking vehicles/equipment will not be allowed on-site;
- waste will be regularly removed from the site; littering prohibited. Sites kept clean and tidy;
- untreated effluents discharge into the environment banned;
- staff trained/briefed in and aware of construction best practice.

6.5 Social Risks potential impacts and management measures

It is expected that the water supply schemes will have positive socio-economic impacts to the community such as increased safe and reliable water supply; improvements in health; improved school enrolment; improved environmental conditions; improved standards of living; reduced resource use conflicts; employment opportunities/income generation; local economic development; improved participation of women and youth; resilient and sustainability of infrastructure; increased food and nutrition security due to improved food hygiene; increase in land value within the project area, due to availability of domestic water supply; community project governance. Despite these positive impacts, there are some potential adverse social impacts that could arise during and after implementation of the project for which safeguards need to be established. These may include:

1) Social exclusion from sub-project benefits such as employment
2) Exploitation of vulnerable (e.g. women and children)/Human right violations
3) Competition for sub-project-generated jobs leading to conflict
4) Community health and safety
5) Negative stakeholder feedback, complaints and grievances
6) Site security
7) Limited access to information and limited communication about the sub-project (progress, potential delays etc.)
8) Cultural heritage impacts

During the implementation of the rural water supply scheme rehabilitation sub-projects, the following potential social risks to communities may arise. These risks can vary depending on the specific context and sub-project circumstances:

1. *Disruption of Water Services:* Rehabilitating water supply schemes involves temporarily suspending or redirecting water services to facilitate the construction or repair work. This can lead to interruptions in the community's access to clean water, affecting daily activities, hygiene practices, and health.

2. *Health and Sanitation Risks:* Inadequate sanitation facilities and limited access to safe water during the project implementation phase can increase the risk of waterborne diseases, particularly if alternative water sources are contaminated or not properly managed. Communities may face challenges in maintaining proper hygiene practices, which can impact their health.

3. *Safety Hazards*: Construction activities associated with the rehabilitation works such as excavation, heavy machinery operation, or installation of pipelines, may pose safety hazards to the community. These hazards can include accidents, injuries, or damage to property if safety measures are not appropriately implemented or communicated.

4. *Social Disruption and Conflict:* The implementation of the water supply rehabilitation projects can lead to social disruption and conflicts within the community. Disagreements over project management, resource allocation, or land rights could arise, potentially causing tension and strained relationships between community members or with project stakeholders.

5. *Economic Impacts:* Communities may experience temporary disruptions to their livelihoods, particularly if water supply interruptions affect agricultural activities or small-scale businesses dependent on water. Income loss, reduced productivity, or increased expenses for alternative water sources can pose economic challenges during the project implementation phase.

6. *Communication and Information Gaps:* Inadequate communication or lack of information about the project's scope, timeline, and potential disruptions can create confusion and mistrust within the community. Misunderstandings and misinformation can hinder community cooperation and engagement.

To mitigate these risks, the following risk management measures and community engagement strategies will be implemented:

- Stakeholder Engagement: Engage and involve the affected communities, local authorities, and relevant stakeholders throughout the rehabilitation process. Conduct consultations, share information, and address concerns to foster ownership and cooperation.
- Communication and Awareness: Maintain effective communication channels to inform communities about project progress, expected disruptions, and alternative water supply arrangements. Raise awareness about the benefits of the rehabilitation project and its impact on the community's well-being.
- Temporary Water Supply Arrangements: Develop contingency plans to minimize disruptions during the rehabilitation process. Establish temporary water supply arrangements, such as tankers or alternative sources, to ensure uninterrupted access to water during the project implementation.
- Capacity Building: Provide training and capacity-building programs to local communities on the operation and maintenance of the rehabilitated water supply schemes. This ensures the long-term sustainability of the infrastructure and promotes community ownership.
- Monitoring and Evaluation: Regularly monitor the performance of the rehabilitated water supply schemes, including water quality, quantity, and community satisfaction. Evaluate the social impacts of the project to identify areas for improvement and ensure the intended benefits are realized.

By addressing these social risks, considering potential impacts, and implementing appropriate management measures, rural water supply scheme rehabilitation sub-projects will be carried out with minimized negative impacts and increased community support and participation and will effectively improve water services, enhance community well-being, and contribute to sustainable development in rural areas.

6.5.1 Social Exclusion from project benefits

The risk of social exclusion from sub-project benefits is an important consideration during the implementation of rural water supply scheme rehabilitation sub-projects. Social exclusion refers to the systematic denial of access to resources, opportunities, and participation in decision-making processes, leading to the marginalization or exclusion of certain individuals or groups from project benefits.

Certain segments of the community, such as women, ethnic minorities, persons with disabilities, or economically disadvantaged groups, may already face social, economic, or cultural barriers that limit their access to resources and opportunities within the community. If not addressed, these existing inequalities can be perpetuated during the implementation of rehabilitation projects, leading to further marginalization and exclusion.

In some cases, the distribution of benefits and resources resulting from sub-project implementation may not be equitable. Communities or individuals with stronger social connections, higher socio-economic status, or better access to information and decision-making processes may disproportionately benefit from the project, while others are left with limited or no access to improved water services.

Lack of meaningful participation and engagement of community members in decision-making processes can result in their exclusion from shaping the project's design, planning, and management. When communities are not adequately involved, their specific needs, preferences, and priorities may not be considered, leading to a lack of responsiveness to their unique circumstances.

Failure to address social exclusion can perpetuate and reinforce existing social inequalities. This can further marginalize vulnerable groups, exacerbate poverty, deepen gender disparities, and contribute to social divisions within the community. Social exclusion hinders sustainable development by limiting the potential benefits and impact of rehabilitation sub-projects. When certain individuals or groups are excluded, their perspectives, skills, and contributions are not fully utilized, resulting in missed opportunities for community empowerment, capacity building, and overall social progress.

To address the risk of social exclusion and promote inclusive sub-project implementation, several measures will be taken:

- A comprehensive social assessment to identify marginalized or vulnerable groups and their specific needs and priorities will be conducted during pre-construction phase.
- Meaningful and inclusive community participation will be ensured throughout the project cycle, including their involvement in decision-making processes, planning, and monitoring.
- Transparency and information-sharing will ensure all community members have access to project-related information and are aware of their rights and entitlements.
- Targeted measures to address the needs of marginalized groups, such as gender-responsive approaches, disability-inclusive design, or affirmative action programs will be implemented.
- Community capacity through training, skill-building, and empowerment initiatives to enhance their participation and decision-making abilities.
- Partnerships and collaboration with local community-based organizations, civil society groups, and non-governmental organizations will be fostered to facilitate the inclusion of marginalized groups.
- Regular monitoring and evaluation of the project's social impacts, will be undertaken, paying specific attention to the equitable distribution of benefits and potential exclusionary practices.
- Continuous review and adaptation of sub-project strategies and interventions to ensure inclusivity and address any identified gaps or challenges.

By proactively addressing the risk of social exclusion and promoting inclusive practices, the water supply scheme rehabilitation sub-projects can contribute to more equitable and sustainable development outcomes, benefiting all members of the community.

6.5.2 Gender

Climate change affects women and men differently. Disasters and related risks and vulnerabilities have social as well as physical dimensions. The impact of disasters and related risks are different for women and men. Shaped by gender roles and relations this is reflected in their differential capacity to respond to disaster. Gender inequality and women’s disempowerment are the determining factors behind women and girls being disproportionately affected by climate change and disasters; and at the same time their ‘skills and life experiences are not identified as resources, and, therefore, are not incorporated into risk reduction and disaster preparedness, relief or recovery efforts’. Unless these inequalities are adequately assessed and incorporated into climate change adaptation and DRR measures, the disparities are likely to be exacerbated.

In rural Timor-Leste, the burden of agricultural work, crop harvesting and caring for home gardens is generally shared between men and women. However, domestic responsibilities such as child-rearing, cooking, cleaning and overall family wellbeing, reflects traditional gender roles. This implies that

women's vulnerabilities to climate change and disaster, while similar to men, include specific additional concerns such as:

- Access to water and firewood;
- destruction of and damage to the home gardens;
- damage to seeds;
- hindered access to markets and hence sale of products/ generation of cash;
- diseases and access to clinics; and
- closing of schools.
- Post-disaster health care

As in many developing countries with limited access to rural water supply systems, in Timor Leste, women and girls are responsible for the water fetching labour, especially in rural areas where access to water resources is limited and water must be fetched from wells and rivers. Typically it requires multiple trips back and forth between the house and the water source in a day to fetch water for the entire family. This consumes significant time spent travelling on foot and waiting in line. Water fetching labour involves carrying heavy water over long distances, often along undeveloped roads, which places an excessive burden on the body and increases the risk of injury and bone deformation.

In addition, washing clothes is often the role of women because of stereotyped gender division of roles, but the limited water available at home often forces women to do laundry in rivers and ponds, where they are at risk of contracting mosquito and parasite-borne diseases. In addition, there is a risk of sexual and gender-based violence (SGBV), including sexual violence, when on the road to fetch water and at water sources. There are limited households with private toilets in the target municipalities, with only 3-5% of households having private indoor bath/shower, 2-4% of households have access to shared indoor bath/shower, 37-64% have access to outdoor household bathing facilities, 9% to 17% of households have shared outdoor bath/showers while 9-41% of households use river/pond for bathing. Where communal/public facilities are available, they may not be separated for women and men, hence safety is not ensured. This could lead to women being forced to take actions that negatively affect their health, such as drinking as little water as possible to reduce the number of times they use the toilet. The lack of separate toilets for women and men in schools and the lack of access to the appropriate type and number of menstrual products can also cause girls to avoid attending school. In addition, water and sanitation may be related to the deaths of women due to childbirth in unsanitary conditions. In addition to these health risks, there is also the risk of SGBV, such as sexual harassment and sexual violence, when having to use toilets not built in safe locations.

Through the development of rural water supply systems in Timor Leste, the labour of water collection, the burden on women and girls, will be reduced and eliminated and should provide the following gender specific benefits:

- Reduced burden on the body caused by water fetching labour
- Improved girls' school enrolment and attendance rate
- Decreased risk of SGBV victimization while fetching water
- Increased time to engage in livelihood improvement activities owing to more free time due to reduced burden of nursing care at home and in the community due to reduced waterborne infections

In addition, the development of water supply schemes that improves access to water within communities may catalyse development of improved bathing and toilet facilities in private households which could have the following effects by improving access to sanitary facilities:

- Ensuring privacy when bathing or using the toilet
- Reduced health risk by eliminating the avoidance of using the toilet
- Reduced burden on the body through improved menstrual hygiene management
- Reduced suffering from risks such as SGBV when using communal facilities
- Improved girls' enrolment and attendance rates (owing to the installation of toilets in schools)

In Timor-Leste, women are often excluded from certain activities due to customary norms or lack of capital and ownership arrangements that confer all rights to men in the family. Women hold very few leadership positions within the districts. In cases where women do participate in local level planning, they are in the minority. An important aspect of gender mainstreaming in Timor-Leste is therefore to increase involvement of women in formal and informal decision-making processes.

Rural women in particular often have few, if any, income opportunities aside from agriculture, a fact which underlines the importance of ensuring equal access to employment opportunities in rural infrastructure development and particularly water supply system works. Seeing women perform well in non-traditional jobs, such as working in water supply system construction and maintenance, also challenges traditional gender roles, is in itself a step towards changing gender norms and advancing gender equality.

The opportunity to participate in rural construction and maintenance works will open up new employment and income generating opportunities for women, as well as increase their agency. It is expected that during the implementation stage itself, there will be available job opportunities for local youths, women and the local community to participate in the construction works. While this will provide income generating opportunities, it will also help to develop the community and household skills set for the future. The sub-project will also target greater participation and involvement of women (targeting at least 30%), vulnerable groups and disability groups. Collaboration and cooperation will be strengthened at local level to ensure gender empowerment and gender equality are in place.

As with all construction projects, there is a potential risk of Gender-based Violence and Harassment (GBVH) to community members and workers. GBVH risks can intensify within local communities when there are large influxes of male workers from outside the area. Such workers often come without their families and have large disposable incomes relative to the local community, and can pose a risk in terms of sexual harassment, violence and exploitative transactional relationships. These risks are higher where workers come into close contact with the local community, for example on access routes or when living together in remote areas. During the construction phase, workers are also vulnerable to various forms of harassment, exploitation and abuse, aggravated by traditionally-male working environments[14]. The main GBVH risk factors and proposed mitigation measures include:

1) Large-scale influx of transient male workers into small and often rural host communities with low capacity to absorb the sudden increase of workers. *The project will aim to source workers from the local population as far as possible. This will benefit the local community in terms of income generation, and will also reduced the influx of transient workers to the host community*

2) Remote locations where people have limited access to resources to report GBVH and receive support. *The project has elaborated a GRM which fully includes mechanisms for reporting GBVH. In addition, GBVH will be regularly monitored on the project site and neighbouring community*

3) Male workers transporting goods (e.g. truck drivers), who can perpetrate GBVH on routes and at truck stops associated with the project, even if not on the project site. *The project GRM will apply along transportation routes of the project and will be widely publicized to ensure coverage*

4) Poorly designed or maintained physical spaces on project sites and in worker accommodation for example bad lighting in and around grounds and access routes. *The project site/construction camp management and OHS plan will include consideration of GBVH when planning the lighting on and around site and along routes which workers may use to access and exit the site.*

5) Informal workers, whose informality means they may either be more vulnerable to GBVH due to lack of contracts or that potential perpetrators may go unidentified due to lack of background checks. W*orking arrangements will be formal, with all workers duly registered as part of the contractor team and in line with relevant OHS and labour laws.*

[14] IFC - Addressing Gender-Based Violence and Harassment (GBVH) in the Construction Sector

6) Income-earning opportunities for women through direct employment in construction or operations, or indirect employment (e.g. catering, traders), which may also increase household tension and create community backlash against women in areas where the perception is that they should not work outside the home. *The overall project GAP includes working with communities to mainstream gender into rural infrastructure development and to enhance gender equality. The sub-project GAP which is based on detailed consultation on gender roles, norms and responsibilities for specific communities, will provide the basis for monitoring any escalation in this type of GBVH that may result from the sub-project is the given locality. In addition the GRM will be applied.*

7) GBVH risks also vary depending on country-level or local factors such as how women are treated in society, legal and regulatory frameworks, and trust in local authorities to investigate reports.

The GCF SRC project will implement its Gender Action Plan, throughout the implementation of the infrastructure sub-projects to ensure that consideration would be given to the needs of women, disabled people and other vulnerable groups and taken into account during planning, design and execution of the project. Additional measures include ensuring adequate representation of vulnerable groups in all stakeholder engagement activities and full compliance with the Grievance Redress Mechanism process.

A sub-project-specific Gender Action Plan has been prepared for each water supply scheme sub-project based on surveys and interviews conducted through Focus Groups Discussion and with the key Informants in the project area. The plan includes several points to improve community services for women and other vulnerable groups through the sub-project. The sub-project specific Gender Action Plan consists of a mix of assessments, training, consultations, monitoring and maintenance processes. The GAP is aligned with the sub-project cycle ensuring all sub-project lifecycle incorporates gender principles and increases gender responsiveness of the project. Responsibility for overseeing the adherence and achievement of this Gender Action Plan is the Gender Specialist, Municipal Gender FP and M&E Officer, for implementing this GAP is the Engineers, Contractor, Climate Change and Environment Officers and for monitoring is M&E Officer and Field Coordinators and Gender FP.

6.5.3 Risks related to unfair labour practices, culturally insensitive labour practices, child labour, forced labour, and Sexual Exploitation, Abuse, and Harassment (SEAH)

To avoid the unintended consequences of maladaptation and their consequences in water supply scheme sub-projects, related to unfair labour practices, culturally insensitive labour practices, child labour, forced labour, and Sexual Exploitation, Abuse, and Harassment (SEAH) the following mitigation measures will be undertaken:

1. *Conduct Comprehensive Risk Assessments:* Undertake thorough risk assessments specific to labor practices and SEAH in the worksites. This involves identifying potential vulnerabilities, analyzing local labor and cultural contexts, and understanding the potential for maladaptation risks. Engage with local communities, labor unions, and relevant stakeholders to gather insights and perspectives.
2. *Stakeholder Engagement and Participation:* Engage with local communities, indigenous groups, labour unions, and other stakeholders throughout the project cycle. Facilitate meaningful participation and consultation to understand their concerns, needs, and expectations related to fair labour practices and SEAH. Incorporate their feedback into project planning, implementation, and monitoring processes. The design and planning process for each RR sub-project involves multiple stakeholders, including local communities, to ensure a holistic understanding of all the potential risk, opportunities and consequences of the project.
3. *Policy and Legal Compliance:* Ensure compliance with international labour standards, national labour laws, and relevant policies. Establish clear guidelines and codes of conduct that explicitly address fair labour practices, cultural sensitivity, child labour, forced labour, and SEAH. Communicate these standards to contractors, subcontractors, and workers involved in the project.

4. *Contractor and Supplier Selection:* Implement rigorous due diligence processes when selecting contractors, subcontractors, and suppliers. Evaluate their track record on fair labour practices and SEAH, including past performance, adherence to labour laws, and the existence of labour management systems. Prioritize contractors and suppliers with a proven commitment to ethical labour practices.
5. *Robust OHS Monitoring and Oversight:* Establish a comprehensive labour monitoring system to identify and address potential maladaptation risks which will involve regular site visits, inspections, worker interviews, and anonymous reporting mechanisms. Engage independent monitors, labour experts, or local NGOs to provide oversight and ensure impartial assessments. Annex 7 of the this ESMP is the Occupational health and safety plan. This plan will be tailored for each sub-project. The contractor will provide compliance in initial report to the Engineer and thereafter submit a compliance report every month. Among others, the following shall be covered as part of OHS monitoring:
    a. Training and awareness for workers – OHS measures, Emergency Management, Use of PPEs. Capacity building programs and training to contractors, subcontractors, and workers on **fair labour practices, cultural sensitivity, child labour, forced labour, and SEAH** will be undertaken. This will include modules on workers' rights, grievance mechanisms, respectful behaviour, and **prevention and response to SEAH incidents**. Training will be tailored to the specific local cultural context and delivered in local languages.
6. *Grievance Mechanisms:* Establish accessible and confidential grievance mechanisms that allow workers to report labour-related concerns, including unfair labour practices and SEAH. Ensure workers are aware of these mechanisms and their right to use them without fear of reprisal. Act promptly to investigate and address grievances, providing appropriate support and redress to affected individuals.
7. *Collaboration and Partnerships:* Collaborate with relevant government agencies, labour unions, civil society organizations, and community representatives to address fair labour practices and SEAH. Engage in multi-stakeholder partnerships to share best practices, leverage resources, and collectively address labour-related challenges.
8. *Continuous Monitoring and Evaluation:* Regular monitoring and evaluation mechanisms to assess the effectiveness of interventions and identify areas for improvement. Monitor key performance indicators related to fair labour practices, SEAH incidents, and workers' satisfaction. Use the findings to make necessary adjustments and ensure ongoing compliance with labour standards.

By integrating these measures into water supply sub-projects, the risks of unfair labour practices, culturally insensitive labour practices, child labour, forced labour, and SEAH can be identified and mitigated. The sub-project will take a holistic and proactive approach that prioritizes the rights and well-being of workers, engages stakeholders, and promotes a culture of accountability and respect throughout the project implementation.

6.5.4 Archaeological and cultural heritage

Water source intakes (all water source areas has cultural/lulik site) is a cultural heritage site but will not be impacted by the scheme works. A ritual ceremony will be conducted by the project with the community before the commencement of any works as detailed in the IPP. No historic archaeological or sacred sites are located within the proposed area.

In case of new chance finds, The Contractor is required to immediately, without delay, halt works and inform the MSA and to undertake measures to ensure the findings are not destroyed or damaged and to protect the area and position in which they are discovered. Contractors will be trained on how to deal with historical archaeological and sacred sites in a responsible manner. Annex 6 details the Chance Find Procedure.

6.5.5 Occupational health and safety

Labor and working conditions shall follow Government of Timor-Leste labour law No. 4 of 2012 that is applicable throughout the territory of Timor-Leste, to all workers and employers and respective organizations in all sectors of activity. This Labor Law addresses the basic requirements on labor

relations applicable to individual and collective labor relations. Injuries and risk to workers health and safety is likely on the construction site and the work requires the use of materials and plant, tools and equipment that can potentially cause harm or injury to its users or nearby observers. Risk to workers and community health can occur because of equipment, poorly managed construction site operations posing danger and risk to workers and community, improper handling of materials and from the (mis)use of equipment and tools, cuts from sharp objects, lack of appropriate PPE.

The Occupational Health and Safety Management Plan has been prepared to guide the management and monitoring of OHS during the implementation of each water supply scheme sub-project. The following key mitigation measures are included:

- Workers shall, at all times, be provided with the necessary safety equipment to prevent accidents and injuries. Furthermore, strict compliance to OSHA, WHO and ILO safety rules and regulations shall be enforced at all times in all the workplace;
- Proper maintenance of vehicles and machinery ensured;
- Machinery inspected prior to use to ensure it is in safe condition;
- Machine perimeter checked before moving to exclude any possibility of collision with people/objects;
- Seatbelts used while operating machine;
- Leaving machinery unattended with engine running prohibited;
- Assign designated spotter, if reversing is required, to guide the move. (Note: The spotters must wear high-viz vests and stay in sight of the driver. The driver must stop if he loses sight of the spotter);
- compliance with work specific safety measures ensured;
- First Aid Boxes available on the sites and maintained and replenished;
- PPE provided; use of the PPE enforced;
- Control exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, through the choice of equipment, installation of vibration dampening pads or devices, and/or limiting the duration of exposure;
- Alcohol use prohibited;
- Mobile phone use while driving banned;
- Drivers and other personnel briefed on safety requirement.
- Proper Management of site construction camp, materials and personnel. Camp location with adequate drainage. Restoration and revegetation of used land (after decamping); Adequate toilet facilities that are clean and hygienic. Sub-project's drinking water should not affect availability of drinking water for community; Items and materials are to be stored in accordance with storage guidelines to safeguard against spillage and contamination; Limit time of exposure to dust particles and noise; and ensure all occupational health and safety requirements are in place on the construction site.
- The contractor will design an environmental, health & safety program to be used in orienting their employees and workers on the environmental standards, environmental protection policies, pollution control program and health & safety drill which the company will implement at regular intervals for the entire duration of project implementation.

6.6 EMERGENCY MANAGEMENT MEASURES

Potential hazards may arise on the construction site due to: site traffic; on-site materials; materials handling and hoisting; natural hazard events during construction (e.g. flooding, landslide); working near or in water bodies; working at night or in reduced light; equipment/plant failure; fire. Due to the complex and fast-changing environment of a construction site, it is important that the identification and assessment of hazards is ongoing, including all of the possible consequences. An emergency management strategy and plan for dealing with the consequences in an emergency situation should be developed so that quick and effective action can be taken in the event of a problem to ease the severity

of the situation and to limit the consequences. An emergency plan comprises agreed, recorded and rehearsed strategies, enabling those on site to respond effectively and reliably.

Emergencies that may need to be planned for include (but are not limited to):

- Serious injuries.
- Explosion.
- Flood.
- Poisoning.
- Electrocution.
- Fire.
- Chemical spill.
- Structural collapse.

Emergency planning should begin before the commencement of any works on site. The initial emergency plan may be based on a generic plan adapted to the specific project. As the sub-project progresses it will generally be necessary to amend the plan to take account of any changes, in particular, if an emergency or near miss has occurred.

In the event of actions occurring, which may result in serious health, safety and environmental (catastrophic) damage, emergency response or contingency actions will be implemented as soon as possible to limit the extent of environmental damage.

The delivery organisation will need to incorporate emergency responses into each sub-project complying with the requirements under the Occupational, Health and Safety Policy of the delivery organisation and the relevant Timor Leste legislation.

The Accredited Entity (UNDP) has its rigorous Social and Environmental Safeguards (SES) policy and procedures which include SES screening and which are complementary and in compliance to ANLA guidelines. Contractors have received the necessary training and will continue to receive refresher training to ensure compliance with social and environmental safeguards including community participation and relations; adherence to labour laws and standards; gender equality; child protection; disability inclusion; workers and public safety. In addition, the GCF-SRC project will work with partners to ensure compliance to the social and environmental safeguards including compliance such as construction camp and site management; waste and wastewater management; tree and vegetation management; noise, dust and traffic management; material and spoil management; erosion control procedures; biodiversity and sensitive areas; workers and public safety; archaeological and cultural heritage.

6.6.1 Cross-Border Impacts

The water supply scheme is completely within rural farming communities, which may border other farming communities. However there are no cross-border impacts expected within the selected sub-project areas.

6.6.2 Other Projects and Cumulative Impact

There is no cumulative negative environmental and social impact that will result from other projects.

6.6.3 Global Impact

The water supply scheme sub-projects are in the remote rural areas of Timor-Leste and will provide improved access to domestic water supply in beneficiary communities which significantly improve the quality of life and standard of living of those communities. There is no envisaged negative impact globally on account of the sub-projects. There is no envisaged negative impact globally on account of the proposed works for the sub-projects.

7 Environmental and Social Management Plan

7.1 Environmental and Social Risk Assessment

As this project is supported by UNDP in its role as a GCF Accredited Entity, the project has been screened against UNDP's Social and Environmental Standards Procedure. The sub-project Social and Environmental Screening Template was prepared, and the project deemed to be a moderate risk project.

An impact risk assessment was undertaken using UNDP Social and Environmental Screening Procedure to assess the probability (expected, highly likely, moderately likely, not likely) and the impact of the risks identified (critical, severe, moderate, minor, negligible). From this, a significance value was attributed to the potential impact (negligible, low, medium, high and extreme).

IMPACT							
	Critical	5	High	High	High	High	High
	Severe	4	Medium	Medium	High	High	High
	Moderate	3	Low	Medium	Medium	Medium	Medium
	Minor	2	Low	Low	Medium	Medium	Medium
	Negligible	1	Low	Low	Low	Low	Low
			1	2	3	4	5
			Slight	Not Likely	Moderately Likely	Highly Likely	Expected
			PROBABILITY				

Figure 7-1: UNDP Risk Matrix

Table 7-1: Rating of Impact of Risk

Score	Rating	Definition
5	Critical	Significant adverse impacts on human populations and/or environment. Adverse impacts high in magnitude and/or spatial extent (e.g. large geographic area, large number of people, transboundary impacts, cumulative impacts) and duration (e.g. long-term, permanent and/or irreversible); areas impacted include areas of high value and sensitivity (e.g. valuable ecosystems, critical habitats); adverse impacts to rights, lands, resources and territories of indigenous peoples; involve significant displacement or resettlement; generates significant quantities of greenhouse gas emissions; impacts may give rise to significant social conflict.
4	Severe	Adverse impacts on people and/or environment of medium to large magnitude, spatial extent and duration more limited than critical (e.g. predictable, mostly temporary, reversible). The potential risk impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially severe.
3	Moderate	Impacts of low magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures.
2	Minor	Very limited impacts in terms of magnitude (e.g. small affected area, very low number of people affected) and duration (short), may be easily avoided, managed, mitigated.
1	Negligible	Negligible or no adverse impacts on communities, individuals, and/or environment.

When undertaking the risk assessment, all activities are assessed for all sub-project phaases - pre-construction, construction and post-construction operation and maintenance. Specific measures for each issue/risk are discussed along with the respective mitigation measures in this ESMP. Mitigation measures and actions have been identified to address the risks identified above, in accordance with the mitigation hierarchy that avoid, or if avoidance not possible, reduce potentially significant adverse social and environmental impacts to acceptable levels. The ESMP (a) identifies and summarizes all anticipated adverse social and environmental impacts; (b) describes – with technical details – each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; (c) estimate of potential social and environmental impacts of these measures and any residual impacts following mitigation (residual risks); and (d) takes into account, and is consistent with, other required mitigation plans.

The environmental and social management plan and mitigation measures which follow aim to mitigate the adverse or negative impacts of the project and to enhance the beneficial or positive impacts.

7.2 Pre-construction Phase

UNDP SES Policy	ESMP Issue No.	Anticipated risks/Impact/Impacted sites	Probability of Impact and Impact	Indicators/Unmitigated Impact	Mitigation/Control Activity (and Source)	Post Mitigation	Responsibility	Frequency of Monitoring and Reporting	MoV
PS1	FF1	Habitat loss and disturbance of fauna	Prob: 1 Impact: 1 Risk: Low	Habitat destruction and disturbance of fauna, loss of vegetation due to cutting and removal of trees and exposure of land	FF1.1 Vegetation on the sub-project site and adjacent area preserved as far as possible - Limit vegetation clearing to operational areas and minimise habitat disturbance through adequate protection and management of retained vegetation. Use temporary fencing protection for root critical zone of the trees. Use labour-based methods as far as possible.	No clearance of vegetation outside of the designated clearing boundaries;	PMU, Contractor, Site supervisor	Daily and maintain records	Site supervisor inspection reports; site baseline and post construction flora and fauna surveys, records of personnel training, Contractor's EDSCP. The MSA must be notified in the event of any suspected instances of death to native fauna and where vegetation if detrimentally impacted
					FF1.3: Ensure that all site personnel are made aware of any sensitive fauna/habitat areas and the requirements for the protection of these areas. Protected species, if discovered on sub-project site, removed from the environment in accordance with relevant international conventions.	No death to native fauna as a result of clearing activities;	PMU, Contractor, Site supervisor	Daily and maintain records	
					FF1.4 Minimise disturbance to on-site fauna during site preparation.	No deleterious impacts on aquatic environments and terrestrial habitats;	PMU, Contractor, Site supervisor	Daily and maintain records, reports	
	FF2	Introduced flora and weed species	Prob: 3 Impact: 3 Risk: Medium	Growth of invasive alien species (IAS)	FF2.1: Develop and Implement EDSCP to reduce the spread of IAS through erosion and sediment entering any waterways and therefore spreading.	No introduction of new IAS as a result of construction activities; and No increase in existing IAS proliferation within or outside of any sub-project footprint as a result of construction activities.	PMU, Contractor, Site supervisor	Maintain records	
PS7	GW 1:	Increase of gross pollutants, hydrocarbons, metals and other chemical pollutants into the groundwater and/or surface water environment.	Prob: 3 Impact: 3 Risk: Medium	Fuel spills, hazardous liquids, hydrocarbons and other chemical pollutants spilling and discharged on the site/onto the ground	GW1.1: Conduct baseline surface and groundwater quality monitoring prior to start of works, in locations where the groundwater is likely to be impacted, including assessing the changes to groundwater quality.	no significant decrease in the quality and quantity of groundwater or surface water as a result of construction and operational activities in proximity to the sub-projects; water quality shall conform to any approval conditions stipulated by UNDP, MCIEMSA and/or other government departments, or in the absence of such conditions follow a 'no worsening' methodology;	PMU, Site engineer	Weekly and as required with reporting to MSA and UNDP	Baseline and periodic water quality survey results, site engineer inspection reports. The MSA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to water quality is exceeded.
					GW1.2: Prevent contaminated surface water from entering aquifers via boreholes and wells - protect from runoff and flooding and keep surrounds clean.	effective implementation of site-specific EDSCPs and other measures to protect surface and groundwater.	All Personnel	Weekly	
					GW1.4: Check all vehicles, equipment and material storage areas daily for possible fuel, oil and chemical leaks. Undertake refuelling at designated places away from water systems.		All Personnel	Daily and maintain records	
					GW 1.5: Minimize the use of herbicides, pesticides and other chemicals and use only biodegradable herbicides that have minimal impact on water quality and fauna. Use only as per directions		All Personnel	Weekly reporting to MSA and UNDP	

PS7	W1	Elevated suspended solids and other contaminants in surface water systems.	Prob: 4 Impact: 3 Risk: Medium	Increased suspended sediment and reduced water quality during site preparation and earthworks near the intake and near river crossings.	W1.1: Develop a site specific Erosion, Drainage and Sediment Control Plan (EDSCP) to address drainage control, sediment and erosion controls and stockpiling of materials including soil during construction of all components of the sub-projects.	By following the management measures set out in the ESMP the sub-project will not have a significant impact on water quality across the broader area.	Contractor	Initial set up	
PS3	A.1	Increase in dust levels at sensitive receptors	Prob: 5 Impact: 3 Risk: Medium	Increased dust near the settlements along the traffic route (offsite and onsite traffic), in quarry/borrow pit areas during site preparatory works	A1.1: Design effective dust management measures for all construction and operation phases	Release of dust/particle matter does not cause an environmental nuisance; Measures undertaken at all times to assist in minimising the air quality impacts associated with construction activities; and	Contractor	Initial set up	Baseline and periodic air-quality monitoring (visual observation) reports, site engineer inspection reports, vehicle and machinery emissions monitoring (visual monitoring), personnel training reports, PPE list
	A2.	Increase in vehicle / machinery emissions	Prob: 5 Impact: 3 Risk: Medium	Increased fumes/emissions from vehicles and machinery near the settlements along the traffic route (offsite and onsite traffic), in quarry/borrow pit areas, during site preparatory works	A2.4 Develop an induction program for all site personnel, which includes as a minimum an outline of the minimum requirements for environmental management relating to the site. Provide masks for the workers and communities.	Corrective action implemented to respond to complaints immediately.	Contractor	Daily and maintain records	
PS3	N1	Increased noise levels	Prob: 3 Impact: 3 Risk: Medium	Increased noise levels on sub-project sites and near the settlements	N1.1: Select plant and equipment and specify design work practices to ensure that noise emissions are minimized during construction and operation including all pumping equipment.	Noise from construction and operational activities does not cause an environmental nuisance at any noise sensitive place; Measures undertaken at all times to assist in minimising the noise associated with construction activities; Allowable noise level must not be violated (which is Leq55dB(A)85dBA)	Contractor	Maintain records	Contractor Traffic Management plans, Site engineer inspection reports, spot check reports on vehicle usage for noise nuisance, personnel training reports, complaints record and GRM records
					N1.2: Specific noise reduction devices such as silencers and mufflers shall be installed as appropriate to site plant and equipment to limit allowable noise levels to Leq55dB(A)	No impact to terrestrial and aquatic species as a result of the construction ;	Contractor	Maintain records	

					N1.3 Plan auxiliary and haulage routes away from densely populated areas to reduce nuisance related to noise. Restrict working hours on weekdays, weekends or public holidays. Minimize the need for noise generating construction works to be carried out outside of the hours: 7am-5.30pm as far as practicable	Corrective action to respond to complaints and/or grievances is to occur within 48 hours.	Contractor	Maintain records	
					N1.8 The contractor should conduct employee and operator training to improve awareness of the need to minimize excessive noise in work practices through implementation of measures. Issue protective equipment to onsite employees and those operating heavy machine and power tools. Optimum travel speed during offsite travel set and complied with. Prohibit leaving vehicles with the engine idling		Contractor	Maintain records	
	N2.	Vibration due to construction	Prob: 3 Impact: 2 Risk: Medium	Vibration from vehicles and heavy plant equipment on site and impacting settlements during earthworks and site preparations	N2.1: Identify properties, structures and habitat locations that will be sensitive to vibration impacts resulting from construction and operation of the sub-project.	No damage to off-site property caused by vibration from construction activities; Corrective action to respond to complaints and/or grievances is to occur within 48 hours.	Contractor	Maintain records	Site engineer inspection reports, spot check reports on plant/equipment usage for vibration disturbance, personnel training reports, complaints record and GRM records
					N2.2: Design to give due regard to temporary and permanent mitigation measures for noise and vibration from construction and operational vibration impacts.	No impact to terrestrial and aquatic species as a result of the construction	Contractor	Maintain records	
PS1	E1:	Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities	Prob: 3 Impact: 3 Risk: Medium	Loss of soil material and sedimentation at excavation sites, sub-project sites	E1.1: Develop an EDSCP for any surface works, embankments and excavation work, water crossings and stormwater pathways.	No build-up of sediment in the aquatic environments and/or surface and/or groundwater as a result of construction and operation activities; No degradation of water quality on or off site; All water exiting the sub-project site and/or into groundwater systems passes through best practice erosion, drainage and sediment controls;	Contractor	Maintain records	Contractor EDSCP, Works schedule, Site plan (areas designated for stockpiling), technical design documents and BoQ, Site engineer inspection reports
					E1.3: Schedule/stage works to minimize cleared areas and exposed soils at all times.	Effective implementation of site-specific EDSCP.	Contractor, PMU, Site engineer	Maintain records	
					E1.4: Incorporate the design and location of temporary and permanent EDSC measures for all exposed areas and drainage lines. These shall be implemented prior to pre-construction activities and shall remain onsite during work		Contractor, PMU, Site engineer	Maintain records	
					E1.5: Schedule/stage proposed works to ensure that major vegetation disturbance and earthworks are carried out during periods of lower rainfall and wind speeds.	No contaminated soil generated by sub-project	Contractor, PMU, Site engineer	Maintain records	
					E1.6: Strip and stockpile topsoil for use during revegetation and/or place removed soils back on to agricultural lands.		Contractor, PMU, Site engineer	Maintain records	
					E1.8: Locate stockpile areas away from drainage pathways, waterways and sensitive locations.	Effective drainage control on site	Contractor, PMU, Site engineer	Maintain records	
					E1.9: Design stormwater management measures to reduce flow velocities and avoid concentrating runoff.		Contractor, PMU, Site engineer	Maintain records	
					E1.10: Include check dams in drainage lines where necessary to reduce flow velocities and provide some filtration of sediment. Regularly inspect and maintain check dams.	Efficient reuse of soil on site	Contractor, PMU, Site engineer	Maintain records	
PS7	WT1:	Production of wastes and excessive use of resources	Prob: 3 Impact: 3 Risk: Medium	Poor management of waste on sub-Project sites and/or adjacent areas; waste sites leading to environment degradation.	WT1.1: Design and Implement a Waste Management plan, which gives shall to materials that can be used to construct the sub-project that would reduce the direct and indirect waste generated.	Waste generation is minimized through the implementation of the waste hierarchy (avoidance, reduce, reuse, recycle); No litter will be observed within the sub-project area or surrounds as a result of activities by site personnel;	Contractor, PMU, Site engineer	Maintain records	Contractor Waste Management Plan, Site engineer inspection (spot checks), complaints record, GRM record

						No complaints received regarding waste generation and management; Any waste from on-site portable sanitary facilities will be sent off site for disposal by a waste licensed contractor;			
PP	SM1	Engage the community for sub-project activities and their involvement	Prob: 1 Impact: 3 Risk: Medium	Failure to engage the community for sub-project activities and their involvement	SM1.1: Get community buy-in on any change of land use	The community has been consulted and sub-project elements have been designed with their informed consultation and participation throughout the sub-project; public disclosure conforms with GCF requirements; all stakeholders are appropriately represented; avoid adverse impacts to local community during construction and operations and where not possible, minimise, restore or compensate for these impacts; cultural heritage is not adversely impacted; community health and safety is protected and overall well-being benefits derived from the sub-project;	PMU, MSA	Maintain records	Community engagement plan and record, community approval/no objection to project activities, GRM record
					SM1.2: Carry out community consultation on the purpose and benefits of making changes to land use	complaint and grievance mechanisms are put in place and proactively managed; and sub-project implemented without any issue or grievance arising from encroachment or displacement.	PMU, MSA	Maintain records	
PS6	SM2	Public nuisance caused by construction/operation activities (e.g. noise, dust etc)	Prob: 3 Impact: 3 Risk: Medium	Sub-Project activities causes nuisance to community.	SM 2.1: Carry out community consultation prior to undertaking activities	Long-term social benefits are achieved.	PMU, MSA	Maintain records	
					SM 2.3: Ensure compliance with the Grievance Redress Mechanism process		PMU, MSA	Maintain records	
	SM3	Encroachment onto surrounding private land, including IP land	Prob: 2 Impact: 3 Risk: Medium	Community complains about encroachment.	SM3.1: Construction works which is on IP land, has received free and prior consent from local community.	Sub-Project implemented without any issue or grievance arising from encroachment or displacement	PMU, SSE, MSA, ANLA	prior to, during and post-construction Reporting to UNDP, MSA and SSE	Contractor surveys and project/Ministry approvals; Site Visit Reports
					SM3.2: Survey and setout to be confirmed and approved prior to commencement of physical works.				
					SM3.3: Implement SEP/GRM and IPP				
					SM 3.4: Monitoring of any potential issues, including GRM.				
PS6	SM5	Construction camp located on land without approval	Prob: 2 Impact: 3 Risk: Medium	Camp located in unapproved location	SM5.1: Location to be agreed based on mutual consultation and agreement among the local authorities, host community and contractor.	Contractor responsible for securing managing and rehabilitating site.	PMU, Contractor	Pre-construction	Land use agreement in place prior to mobilisation; FPIC documentation (if on IP land)
					SM 5.2: Contractor to have appropriate agreements in place prior to mobilisation to site.				
					SM 5.3: The site is to be identified with the contractor prior to mobilisation and commencement of the works				
					SM 5.4: If site is on IP land, the FPIC required for temporary land use agreement.				

PS4	CH1:	Damage or disturbance to significant important Archaeological, Indigenous and/or Cultural Heritage during the earth disturbances and land clearing activities	Prob: 3 Impact: 3 Risk: Medium	Sub-Project activities disturb or destroy important archaeological, indigenous and/or cultural heritage sites	CH1.1: Should any important Archaeological, Indigenous and/or Cultural Heritage sites, immediately cease work within the area that the site has been observed and consult with the relevant Museum/traditional owner groups, UNDP, MCIE and archaeologist available for implementation during construction.	There will be no impact on any important Archaeological, Indigenous and/or Cultural Heritage sites; Manage any specific sites of important Archaeological, Indigenous and/or Cultural significance (significant sites); Where there is a mix of modern development and traditional 'fale' areas within villages use community engagement to confirm options of enabling future development as nominated by the participants and protecting culturally significant traditional areas and Work with the village communities to differentiate between traditional village areas of cultural significance (uses and physical form) within each of the Village fono boundary areas during the construction phase of the sub-project.	PMU, Contractor	Daily, maintain records and immediately notify UNDP and MSA of any find	Site engineer report
PS7	EM1	Fire and Emergency management and prevention strategies implemented	Prob: 5 Impact: 3 Risk: Medium	Uncontrolled hazards affecting workers and local community at or near construction site	EM1.8: Prepare an emergency management plan for the works, designed in accordance with appropriate international standards	Emergency Management Plan in place and sub-project personnel trained in its use and implementation	Contractor	Daily and maintain records	Contractor's EMP and personnel training record
					EM1.9: Sub-Project personnel trained in Emergency Management plan	Emergency Management Plan in place and sub-project personnel trained in its use and implementation	Contractor	Daily and maintain records	

7.3 Construction Phase

Environmental and Social Issue	UNDP SES Policy	ESMP Issue No.	Anticipated risks/Impact	Probability of Impact and Impact	Indicators/Unmitigated Impact	Mitigation/Control Activity (and Source)	Post Mitigation	Responsibility	Frequency of Monitoring and Reporting	MoV
Ecology – Flora and Fauna	PS1	FF1.	Habitat loss and disturbance of fauna	Prob: 1 Impact: 1 Risk: Low	Sensitive habitat destruction and disturbance of fauna, loss of vegetation due to cutting and removal of trees and exposure of land	FF1.1 Vegetation on the sub-project site and adjacent area preserved as far as possible - Limit vegetation clearing to operational areas and minimise habitat disturbance through adequate protection and management of retained vegetation. Use temporary fencing protection for root critical zone of the trees. Use labour-based methods as far as possible.	no clearance of vegetation outside of the designated clearing boundaries;	PMU, Site Supervisor, MSA, ANLA, SSE	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	Site supervisor inspection reports; site baseline and post construction flora and fauna surveys, records of personnel training, Contractor's EDSCP.
						FF1.2: Minimise noise levels and lighting intrusion throughout construction and operation in the vicinity of any sensitive locations. Traffic routes strictly observed during construction. Works scheduled with consideration of period sensitive for fauna species (birds, fish, amphibians in particular); Trees checked for presence of bat roosting places.	no death to native fauna as a result of clearing activities;	Contractor, Field Coordinator, Site Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	The MSA must be notified in the event of any suspected instances of death to native fauna and where vegetation if detrimentally impacted
						FF1.3: Ensure that all site personnel are made aware of sensitive fauna/habitat areas and the requirements for the protection of these areas. Protected species, if discovered on sub-project site, removed from the environment in accordance with relevant international conventions.		Contractor, Field Coordinator, Site Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						FF1.4 Minimise disturbance to on-site fauna and recover and rescue any injured or orphaned fauna during construction and operation. Trenches or pits fenced/protected to avoid entrapping and injuries of the fauna species. Use directed light (wherever required) to avoid impact on avian fauna.	no deleterious impacts on aquatic environments and terrestrial habitats;	Contractor, Field Coordinator, Site Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
		FF2.	Introduced invasive flora and weed species	Prob: 3 Impact: 3 Risk: Medium	Growth of weeds	FF2.1: Implement EDSCP to reduce the spread of weeds through erosion and sediment entering any waterways and therefore spreading.	no introduction of new weed species as a result of construction activities ; and	Contractor, Field Coordinator, Site Engineer	Maintain records	
						FF2.2: Revegetate disturbed areas using native and locally endemic species that have high habitat value. Consult with MAF.		Contractor, Field Coordinator, Site Engineer	As required and maintain records	
						FF2.3: Minimise disturbance to mature remnant vegetation, particularly canopy trees.	no increase in existing weed proliferation within or outside of any sub-project footprint as a result of construction activities.	Contractor, Field Coordinator, Site Engineer	Daily and maintain records	
						FF2.6: Environmental weeds and noxious weeds within the sub-project footprints shall be controlled.		Contractor, Field Coordinator, Site Engineer	Weekly and maintain records	
			Tree root systems could damage pipeline	Prob: 3 Impact: 3 Risk: Medium	Trees growing on pipeline route	FF2.7: During revegetation ensure pipeline route is free of trees. Plant shorter and seasonal vegetation instead for a 1m radius to protect the pipeline	Pipeline route including 1m radius clear of trees and revegetated with shorter vegetation	Contractor, Field Coordinator, Site Engineer	Maintain records	Site supervisor inspection reports; site baseline and post construction flora and fauna surveys, records of personnel training, Contractor's EDSCP.
Groundwater Quality and quantity	PS7	GW 1:	Increase of gross pollutants, hydrocarbons, metals and other chemical pollutants into the groundwater and/or surface water environment.	Prob: 3 Impact: 3 Risk: Medium	Fuel spills, hazardous liquids, hydrocarbons and other chemical pollutants spilling and discharged on the site/onto the ground	GW1.1: Conduct regular surface and groundwater quality monitoring in locations where the groundwater is likely to be impacted, including assessing the changes to groundwater quality.	No significant decrease in the quality and quantity of groundwater or surface water as a result of construction and operational activities in proximity to the sub-projects;	Contractor, Field Coordinator, Site Engineer	Weekly and as required with reporting to MSA and UNDP	Baseline and periodic water quality survey results, site engineer inspection reports.
						GW1.2: Prevent contaminated surface water from entering aquifers via boreholes and wells - protect from runoff and flooding and keep surroundings clean. Implement best-practise for drilling wells which minimises contamination risk. Ensure design and construction minimises backflow within the water distribution system.		Contractor, Field Coordinator, Site Engineer	Weekly	

						GW1.3: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	water quality shall conform to any approval conditions stipulated by UNDP, MCIEMSA and/or other government departments, or in the absence of such conditions follow a 'no worsening' methodology;	Contractor, Field Coordinator, Site Engineer	Weekly with reporting to MSA and UNDP	The MSA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to water quality is exceeded.
						GW1.4: Check all vehicles, equipment and material storage areas daily for possible fuel, oil and chemical leaks. Undertake refuelling at designated places away from water systems.		Contractor, Field Coordinator, Site Engineer	Daily and maintain records	
						GW 1.5: Minimize the use of herbicides, pesticides and other chemicals and use only biodegradable herbicides that have minimal impact on water quality and fauna. Implement GW quality protection measures e.g. Slope the area around wells to drain surface runoff away from the well; Install a well cap or sanitary seal to prevent unauthorized use of, or entry into, a well.	effective implementation of site-specific EDSCPs and other measures to protect surface and groundwater.	Contractor, Field Coordinator, Site Engineer	Weekly reporting to MSA and UNDP	
Surface water Quality and quantity	PS7	W1:	Elevated suspended solids and other contaminants in surface water systems	Prob: 5 Impact: 3 Risk: Medium	Increased suspended sediment and reduced water quality near the intake, and near river crossings.	W1.2: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	By following the management measures set out in the ESMP the sub-project will not have a significant impact on water quality across the broader area.	Contractor, Field Coordinator, Site Engineer	Weekly with reporting to MSA and UNDP	
						W1.3: Conduct regular surface water quality and quantity monitoring in location where the surface water is likely to be impacted including assessing the changes to water quality.		Contractor, Field Coordinator, Site Engineer	Weekly and as required with reporting to MSA and UNDP	
						W1.4: Schedule works in stages to ensure that disturbed areas are revegetated and stabilised progressively and as soon as practicable after completion of works.		Contractor, Field Coordinator, Site Engineer	Maintain records	
						W1.5: Construction materials will not be stockpiled in proximity to aquatic environment that may allow for release into the environment. Construction equipment will be removed from in proximity to the aquatic environment at the end of each working day or if heavy rainfall is predicted		Contractor, Field Coordinator, Site Engineer	Maintain daily records	
Air Quality	PS7	A.1	Increase in dust levels at sensitive receptors	Prob: 4 Impact: 3 Risk: Medium	Increased dust near the settlements along the traffic route (offsite and onsite traffic), in quarry/borrow pit areas during site preparatory works	A1.1: Implement effective dust management measures in all areas during design, construction and operation. Restrict active construction activities to not more than a total of 500 meters sections at a time to minimize dust as far as practicable.	release of dust/particle matter does not cause an environmental nuisance;	All Personnel	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	Baseline and periodic air-quality monitoring (visual observation) reports, site engineer inspection reports, vehicle and machinery emissions monitoring (visual monitoring), personnel training reports, PPE list
						A1.2: Restrict speeds on roads and access tracks. Optimum speed while moving through the communities set to reduce dust emissions;		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A1.3: Manage dust/particulate matter generating activities to ensure that emissions do not cause an environmental nuisance at any sensitive locations. Dampen/spray all unpaved roads and significant areas of uncovered soil with water at regular intervals (as required) on working days, during dry and windy weather;	undertake measures at all times to assist in minimising the air quality impacts associated with construction activities; and	Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A1.4: Construction activities should minimize risks associated with climatic events (check forecasts).		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A1.5: Implement scheduling/staging of proposed works to ensure major vegetation disturbance and earthworks are minimized.	Corrective action implemented to respond to complaints immediately.	Contractor	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A1.6: Locate material stockpile areas as far as practicable from sensitive receptors. Cover if appropriate.		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A1.7: Source sufficient water of a suitable quality for dust suppression activities complying with any water restrictions.		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	

						A1.8: Schedule revegetation activities to ensure optimum survival of vegetation species.		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A1.9: Rubbish receptacles should be covered and located as far as practicable from sensitive locations		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
	PS7	A2.	Increase in vehicle / machinery emissions	Prob: 4 Impact: 3 Risk: Medium	Increased fumes/emissions from vehicles and machinery near the settlements along the traffic route (offsite and onsite traffic), in quarry/borrow pit areas, during site preparatory works	A2.1 Ensure vehicles/machines are switched off when not in use. Prohibit leaving vehicles with the engine idling;		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A2.2 Ensure only vehicles required to undertake works are operated onsite. Cover loose material (if any), with tarpaulins when transported to or off-site on trucks;		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A2.3 Ensure all construction vehicles, plant and machinery are maintained and operated in accordance with design standards and specifications.		Field Coordinator	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	
						A2.4 Develop and implement an induction program for all site personnel, which includes as a minimum an outline of the minimum requirements for environmental management relating to the site.		Contractor	Maintain records	
						A2.5 Locate construction vehicle/plant/equipment storage areas as far as practicable from sensitive locations.		Field Coordinator	Daily and maintain records	
						A2.6 Direct exhaust emissions of mobile plant away from the ground.		Field Coordinator	Daily and maintain records	
						A2.7 Staff trained/briefed in and aware of construction best practice. Provide masks for the workers and communities.		Field Coordinator	Maintain records	
Noise and Vibration	PS3	N1:	Increased noise levels	Prob: 3 Impact: 2 Risk: Medium	Increased noise levels on sub-project sites and near the settlements	N1.1: Select plant and equipment and specify design work practices to ensure that noise emissions are minimized during construction.	Noise from construction and operational activities does not cause an environmental nuisance at any noise sensitive place; Measures undertaken at all times to assist in minimising the noise associated with construction activities;	Contractor	Maintain records	Contractor Traffic Management plans, Site supervisor report, engineer inspection reports, spot check reports on vehicle usage for noise nuisance, personnel training reports, complaints record and GRM records
						N1.2: Specific noise reduction devices such as silencers and mufflers shall be installed as appropriate to site plant and equipment to limit allowable noise levels to Leq55dB(A)		Contractor	Maintain records	
						N1.3 Restrict working hours on weekdays, weekends or public holidays. Minimize the need for noise generating construction works to be carried out outside of the hours: 7am-5.30pm as far as practicable		Contractor, Field Coordinator	Daily and maintain records	
						N1.4: Consultation with nearby residents in advance of construction activities particularly if noise generating construction activities are to be carried out outside of 'daytime' hours: 7am-5.30pm.	Allowable noise level must not be violated (which is Leq55dB(A)85dBA)	Site supervisor	As needed and maintain records	
						N1.5 The use of substitution control strategies shall be implemented, whereby excessive noise generating equipment items onsite are replaced with other alternatives.		Contractor	Daily and maintain records	
						N1.6 Provide temporary construction noise barriers in the form of solid hoardings where there may be an impact on specific residents.	No impact to terrestrial and aquatic species as a result of the construction ;	Contractor	Daily and maintain records	
						N1.7 All incidents complaints and non-compliances related to noise shall be reported in accordance with the site incident reporting procedures and summarised in the register.		Site Supervisor	Maintain records	

						N1.8 The contractor should conduct employee and operator training to improve awareness of the need to minimize excessive noise in work practices through implementation of measures. Issue protective equipment to onsite employees and those operating heavy machine and power tools. Optimum travel speed during offsite travel set and complied with. Prohibit leaving vehicles with the engine idling	Corrective action to respond to complaints and/or grievances is to occur within 48 hours.	Contractor	Maintain records	
	PS3	N2.	Vibration due to construction	Prob: 3 Impact: 2 Risk: Medium	Vibration from vehicles and heavy plant equipment on site and impacting settlements during earthworks and site preparations	N2.1: Identify properties, structures and habitat locations that will be sensitive to vibration impacts resulting from construction and operation of the sub-project.	No damage to off-site property caused by vibration from construction activities; Corrective action to respond to complaints and/or grievances is to occur within 48 hours.	Contractor	Maintain records	Site engineer inspection reports, spot check reports on plant/equipment usage for vibration disturbance, personnel training reports, complaints record and GRM records
						N2.3: All incidents, complaints and non-compliances related to vibration shall be reported in accordance with the site incident reporting procedures and summarised in the register.		Site Supervisor	Maintain records	
						N2.4: During construction, standard measure shall be taken to locate and protect underground services from construction and operational vibration impacts.	No impact to terrestrial and aquatic species as a result of the construction	Contractor	Maintain records	
Erosion, Drainage and Sediment Control	PS1	E1:	Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities	Prob: 3 Impact: 3 Risk: Medium	Loss of soil material and sedimentation at excavation sites, sub-project sites; increased sedimentation of surface and GW systems	E1.1: Implement an EDSCP for any surface works, embankments and excavation work, water crossings and stormwater pathways. Stormwater management measures to reduce flow velocities and avoid concentrating runoff designed and implemented; Silt curtain installed to protect from increased sediment loads;	no build-up of sediment in the aquatic environments and/or surface and/or groundwater as a result of construction and operation activities;	Contractor, Site Engineer	Maintain records	Contractor EDSCP, Works schedule, Site plan (areas designated for stockpiling), technical design documents and BoQ, Site engineer inspection weekly reports
						E1.2: Ensure that erosion and sediment control devices are installed, inspected and maintained as required.		All Personnel	Maintain records	site inspections reports after rainfall events exceeding 20mm in a 24 hour period;
						E1.3: Schedule/stage works to minimize cleared areas and exposed soils at all times. Vegetation on the sub-project site and adjacent area preserved. Topsoil stripped and stockpiled (away from sensitive locations) for use during revegetation protected from erosion. Topsoil removed from all areas required for permanent and temporary needs of the sub-project, stored separately from subsoil. Exvacated soil from digging the trench for the pipeline should be used to cover the pipes once the laying process has been completed. This should be done as soon as possible to avoid erosions and loss of soil.	no degradation of water quality on or off site;	Contractor and Field Coordinator	Maintain records	Site-specific checklist to document non-conformances to this ESMP or any applicable EDSCPs; and
						E1.4: Incorporate the design and location of temporary and permanent EDSC measures for all exposed areas and drainage lines. These shall be implemented prior to pre-construction activities and shall remain onsite during work		PMU, Contractor, Field Coordinator	Maintain records	Results of inspections and/or water quality testing.
						E1.5: Schedule/stage proposed works to ensure that major vegetation disturbance and earthworks are carried out during periods of lower rainfall and wind speeds	all water exiting the sub-project site and/or into groundwater systems passes through best practice erosion, drainage and sediment controls;	Contractor and Field Coordinator	Maintain records	
						E1.6: Strip and stockpile topsoil for use during revegetation and/or place removed soils back on to agricultural lands.		Contractor	Maintain records	
						E1.7: Schedule/stage works to minimize the duration of stockpiling topsoil material. Vegetate stockpiles if storage required for long periods.	effective implementation of site-specific EDSCP.	Contractor and Field Coordinator	Maintain records	
						E1.8: Locate stockpile areas away from drainage pathways, waterways and sensitive locations.		Contractor	Maintain records	
						E1.9: Design stormwater management measures to reduce flow velocities and avoid concentrating runoff.	No contaminated soil generated by sub-project	PMU, Field Engineer	Maintain records	

						E1.10: Include check dams in drainage lines where necessary to reduce flow velocities and provide some filtration of sediment. Regularly inspect and maintain check dams.		Field Coordinator	Maintain records	
						E1.11: Mulching shall be used as a form of erosion and sediment control and where used on any slopes (dependent on site selection), include extra sediment fencing during high rainfall. Use mulching to provide adequate vegetation for erosion protection on slopes prior to harsh weather conditions, at sites with surface erosion, daily temperature fluctuations, lack of available moisture, acidic soils, lack of nutrients, and lack of organic material and to supplement other erosion control treatments such as seeding and soil bioengineering. Use soil stabilizers to tack mulches on hard to reach areas and increase mulch durability	Effective drainage control on site	PMU, Contractor, Field Engineer	Maintain records	
						E1.12: Bunding shall be used either within watercourses or around sensitive/dangerous goods as necessary.		Contractor	Maintain records	
						E1.13: Grassed buffer strips shall be incorporated where necessary during construction to reduce water velocity.	Efficient reuse of soil on site	Contractor	Maintain records	
						E1.14: Silt fences or similar structures to be installed to protect from increased sediment loads.		Contractor	Maintain records	
						E1.15: Excess sediment in all erosion and sediment control structures (e.g. sediment basins, check dams) shall be removed when necessary to allow for adequate holding capacity.		Contractor	Maintain records	
	PS1	E2:	Soil Contamination	Prob: 3 Impact: 3 Risk: Medium	Soil contamination from construction activities	E2.1: If contamination is uncovered or suspected (outside of the sub-project footprints), undertake a Stage 1 preliminary site contamination investigation. The contractor should cease work if previously unidentified contamination is encountered and activate management procedures and obtain advice/permits/approval (as required).		Site Engineer, Contractor, Field Coordinator	Daily and maintain records	
						E2.2: Adherence to best practice for the removal and disposal of contaminated soil/ material from site (if required), including contaminated soil within the sub-project footprints.		Contractor	Daily and maintain records	
						E2.3: Drainage control measures to ensure runoff does not contact contaminated areas (including contaminated material within the sub-project footprints) and is directed/diverted to stable areas for release.		PMU, Contractor, Site Engineer	Daily and maintain records	
						E2.4: Avoid importing fill that may result in site contamination and lacks accompanying certification/documentation. Where fill is not available through on site cut, it must be tested in accordance with geotechnical specifications.		PMU, Contractor, Site Engineer	Daily and maintain records	
	PS1	E3:	Disposal of excess soil/silt	Prob: 3 Impact: 3 Risk: Medium	Difficulty disposing of build-up of silt and excess soil removed/generated	E3.1: Silt removed from existing canals during rehabilitation / maintenance is to be beneficially reused e.g. composted, returned to farmland, brick making etc. Silt should be tested to confirm suitability for proposed use. Spoils will be stored at designated areas including making use of eroded gullies and land; Storage of stockpiles away from water bodies; Rehabilitation of spoil disposal areas; Balancing Cut and Fill to minimize extraction; Provision of drainage during quarrying and borrow operation to avoid development of mosquito breeding areas; Ensuring borrow pits are stable; Re-instatement and vegetation of quarries		Contractor, Site Engineer	Maintain records	
Waste Management	PS7	WT1	Production of wastes and excessive use of resources	Prob: 3 Impact: 3 Risk: Medium	Construction waste on site and potentially in surrounding villages	WT1.1: Preference shall be given to materials that can be used to construct the sub-project that would reduce the direct and indirect waste generated.	Waste generation is minimized through the implementation of the waste hierarchy (avoidance, reduce, reuse, recycle);	Contractor	Maintain records	Contractor Waste Management Plan, Site engineer inspection (spot checks), complaints record, GRM record

						WT1.2: Daily waste practices shall be carried out unless these are delegated to the activities of external waste management bodies. Waste will be collected and removed from the work camps and disposed in waste disposal areas; Waste to be disposed of offsite at an approved facility agreed with the municipality and as per national Environment Law.	no litter will be observed within the sub-project area or surrounds as a result of activities by site personnel; no complaints received regarding waste generation and management; any waste from on-site portable sanitary facilities will be sent off site for disposal by a waste licensed contractor; and	Contractor	Daily and maintain records	The MSA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to waste is exceeded.
						WT1.3: The use of construction materials shall be optimized and where possible a recycling policy adopted.		Contractor	Weekly and maintain records	
						WT1.4: Separate waste streams shall be maintained at all times i.e. general domestic waste, construction and contaminated waste. Specific areas on site shall be designated for the temporary management of the various waste streams. Segregation of hazardous wastes (oily wastes, used batteries, fuel drums) to ensure that storage, transport, and disposal shall not cause pollution, consistent with national/municipal authorities in accordance with National Environmental Law.		Contractor, Site Engineer	Weekly and maintain records	
						WT1.5: Any contaminated waste shall be disposed of at an approved facility.		Contractor	Weekly and maintain records	
						WT1.6: Recyclable waste (including oil and some construction waste) shall be collected separately and disposed of correctly, and/or designated facility as per the Government of Timor-Leste Environment Law and designated locations by municipality.		Contractor	Weekly and maintain records	
						WT1.7: Waste sites shall be sufficiently covered to ensure that wildlife does not have access.		Contractor	Daily	
						WT1.8: Disposal of waste shall be carried out in accordance with the Government of Timor Leste requirements.		Contractor	Weekly and maintain records	
						WT1.9: Fuel and lubricant leakages from vehicles and plant shall be immediately rectified.		Contractor	Daily and maintain records	
						WT1.10: Major maintenance and repairs shall be carried out off-site whenever practicable.		Contractor	Weekly and maintain records	
						WT1.11: Where possible, fuel and chemical storage and handling shall be undertaken at central fuel and chemical storage facilities, such as petrol stations.		Contractor	Daily and maintain records	
						WT1.12: On-site storage of fuel and chemicals shall be kept to a minimum.		Contractor	Daily, maintain records and report any incidents	
						WT1.13: Any waste oils and lubricants are to be collected and transported to recyclers or designated disposal sites as soon as possible.		Contractor	Daily and maintain records	
						WT1.14: Any dangerous goods stored on site shall be stored in accordance with Timor Leste regulations.		Contractor	Daily and maintain records	
Social Risk	PP	SM 1	Engage the community for sub-project activities and their involvement	Prob: 3 Impact: 3 Risk: Medium	Poorly engage communities, leading to lack of ownership/buy-in, grievances and disruption of the work.	SM 1.3: Ensure compliance with the Grievance Redress Mechanism process	The community has been consulted and sub-project elements have been designed with their informed consultation and participation throughout the sub-project; public disclosure conforms with GCF requirements;	MSA	Weekly and Maintain records Records of all consultations are to be kept and reported on a weekly basis.	Community approval/no objection to sub-project activities; Community engagement plan and record of community consultations, GRM record The MSA must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

						all stakeholders are appropriately represented; avoid adverse impacts to local community during construction and operations and where not possible, minimise, restore or compensate for these impacts; cultural heritage is not adversely impacted; community health and safety is protected and overall well-being benefits derived from the sub-project; complaint and grievance mechanisms are put in place and proactively managed; and long-term social benefits are achieved.			
PS3	SM 2	Public nuisance caused by construction/operation activities (e.g. noise, dust etc)	Prob: 3 Impact: 3 Risk: Medium	Sub-Project activities causes nuisance to community.	SM2.2: Implement appropriate management plans (refer to Noise, Air, ESCP, and Waste sections of the ESMP)		Site supervisor and MSA	Daily and maintain records	
					SM 2.3: Ensure compliance with the Grievance Redress Mechanism process		MSA	Maintain records	
PS6	SM3	Encroachment onto surrounding private land, including IP land	Prob: 2 Impact: 3 Risk: Medium	Community complains about encroachment.	SM3.1: Ensure that land-owners for which construction works will be on or near their land, are properly consulted prior to start of works, free and prior consent (through FPIC process) is given and local community kept informed/updated during the construction.	Sub-Project implemented without any issue or grievance arising from encroachment or disturbance/nuisance to surrounding land owners	PMU, SSE, MSA, ANLA	Prior to, during and post-construction	Community engagement and consultation records, FPIC, Contractor surveys and project/Ministry approvals.
					SM3.2: Survey and setout to be confirmed and approved prior to commencement of physical works.			Reporting to UNDP, MSA and SSE	Site Visit Reports
					SM3.3: Implement SEP/GRM and IPP				IPP plan implementation record, GRM record
					SM 3.4: Monitoring of any potential issues, including GRM.				
PS6	SM4	Sub-Project may encroach on additional surrounding lands and territories claimed by indigenous peoples (IP)	Prob: 2 Impact: 3 Risk: Medium	Sub-project encroaches onto on IP lands/territories without prior agreement.	SM 4.1: Obtain no objection/free and prior consent for the Sub-project activities from IP-owned land owners of surrounding land	Continue to implement SEP/GRM & IPP	PMU, local authorities, SSE, ANLA, MSA	Daily and maintain records,	Contractor surveys/approvals
					SM 4.2: Identify surrounding landownership and claims			Weekly reporting to UNDP, MSA and SSE	Land ownership confirmation document
					SM 4.3: Prepare and implement the IPP. Undertake the FPIC process and broad consultation with IP communities and stakeholders.			Weekly reporting to UNDP, MSA and SSE	FPIC, IPP, IP declaration letter
					SM 4.4: Survey and Setout to be confirmed and approved prior to commencement of physical works.			Maintain records	Survey maps of land ownership, FPIC, IPP, IP declaration letter
PS3	SM5	Limited participation and involvement of women, youth, people with disabilities (PWD) and other vulnerable people	Prob: 3 Impact: 3 Risk: Medium	Women, youth and PWD not properly included in sub-project implementation	SM5.1: Prepare and implement a robust Gender Action Plan (GAP)	Continue to implement GAP	Contractor, local authorities	Maintain records	Contractor employee list, site visit reports, GAP

Archaeological and Cultural	PS6	CH1:	Damage or disturbance to significant important Archaeological, Indigenous and/or Cultural Heritage during the earth disturbances and land clearing activities	Prob: 1 Impact: 3 Risk: Low	Sub-Project activities disturb or destroy important archaeological, indigenous and/or cultural heritage sites	CH1.1: Should any important Archaeological, Indigenous and/or Cultural Heritage sites, immediately cease work within the area that the site has been observed and consult with the relevant Museum/traditional owner groups, UNDP, MCIE and archaeologist available for implementation during construction.	There will be no impact on any important Archaeological, Indigenous and/or Cultural Heritage sites; Manage any specific sites of important Archaeological, Indigenous and/or Cultural significance (significant sites); Where there is a mix of modern development and traditional 'fale' areas within villages use community engagement to confirm options of enabling future development as nominated by the participants and protecting culturally significant traditional areas; and Work with the village communities to differentiate between traditional village areas of cultural significance (uses and physical form) within each of the Village fono boundary areas during the construction phase of the sub-project.	PMU, Contractor	Daily, maintain records and immediately notify UNDP and MSA of any find	Site engineer report
Occupational Health and Safety	PS3	OHS1:	Risk of poor health and safety of workers due to Poor OHS practices	Prob: 3 Impact: 3 Risk: Medium	Poor management of site health and safety; Personnel without access to protective gear and equipment; ambient air and noise level above acceptable levels; No provision of WASH facilities within the workplace; and lack of potable drinking water for workers	OHS1.1: Contractor's method statement to include the mobilization and setting up of proper and well managed construction camps and facilities. Contractor to implement an environmental, health & safety program to be used in orienting their employees and workers on the environmental standards, environmental protection policies, pollution control program.	Site Management and setting up clearly outlined and detailed in the Method Statement, included in BOQ No near-misses, incidents or accidents arising from construction works. Personnel with access to: Personnel protective gear and equipment; Fire protection equipment; Ambient air and noise level; Provision of portalets (portable toilets) within the workplace; First aid stations and equipment Potable drinking water for workers;	PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	OHS Management Plan, Contractor's Method Statement; Site inspection reports and spot checks, complaints reports, near-miss/ incident report, personnel training record, PPE inventory, vehicle inspection logs, equipment inspection logs MSA must be notified in the event of any incident and ensure the appropriate remedial action is taken
						OHS1.2: Workers provided with the necessary safety equipment to prevent accidents and injuries. Furthermore, strict compliance to OSHA, WHO and ILO safety rules and regulations shall be enforced at all times in all the workplace. PPE provision and enforcement of use.		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS1.3: Implement Health & Safety drill at regular intervals for the entire duration of sub-project implementation		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS1.4: Proper maintenance and regular inspection of vehicles and machinery		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS1.5: Assign designated spotter, if reversing is required, to guide the move. (Note: The spotters must wear high-viz vests and stay in		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	

						sight of the driver. The driver must stop if he loses sight of the spotter.).				
						OHS1.6: First Aid Boxes available on the sites, maintained and replenished		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS1.7: Control exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, through the choice of equipment, installation of vibration dampening pads or devices, and/or limiting the duration of exposure		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS1.8: Proper Management of site construction camp, materials and personnel. Camp location with adequate drainage; Adequate toilet facilities that are clean and hygienic; sub-project's drinking water should not affect availability of drinking water for community; Items and materials are to be stored in accordance with storage guidelines to safeguard against spillage and contamination; Limit time of exposure to dust particles and noise; Provision of warning signs on and near site. Ensure all occupational health and safety requirements are in place on the construction site; Restoration and revegetation of used land on decamping. Regularly record camp conditions.		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS1.9: Prohibition of alcohol at any time on site and prohibition of the use of mobile phone while driving;		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	
						OHS 1.10: Maintain records of all incidents, near-misses and accidents		PMU, Contractor, MSA, Engineer	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE.	Incident records
		OHS2:	Spread of COVID	Prob: 3 Impact: 3 Risk: Medium	COVID reported among team members and participants of the assessment and consultations	OHS2.1: Follow all COVID-19 precautionary measures	COVID precautionary measures and no reported case as a result of the activities	PMU, local authorities, SSE, MSA	Daily and maintain records, Weekly reporting to UNDP, MSA and SSE	Site Reports
		OHS3:	Child labour recruited	Prob: 2 Impact: 4 Risk: Medium	Child(ren) recruited to work on the construction site	OHS4.1: Ensure that all stakeholders are aware that the use of child labour is not permitted and relevant clauses of national law and international standards attached to the contract.	Child(ren) are not engaged or employed to do construction works.	PMU, Contractor, MSA, Engineer	Daily and maintain records,	Contractor's Method Statement, Reports
						OHS4.2: Close collaboration with community leaders and contractor prior to mobilization on the site to ensuring that there is no child labour. Monitor during sub-project staff visit.		PMU, Contractor, MSA, Engineer	Weekly reporting to UNDP, MSA and SSE	
		OHS4:	Risk of increased SEAH and GBV particularly due to influx of workers	Prob: 2 Impact: 4 Risk: Medium	Exploitation and sexual violence against women on site and in communities	OHS4: Local workforces will be engaged – in line with Government PDIM requirements; Implementation of GAP; Code of Conduct to include SEAH and GBV prevention; Contractors, suppliers and partners adhere to zero tolerance for SEAH and GBV take adequate action if faced with SEAH allegations; Termination of Contractual arrangements if breaches confirmed	Zero SEAH and GBV incidents	PMU, Contractor, MSA, Engineer	Daily records; Weekly reporting to UNDP, MSA and SSE	Contractor's Method Statement; GAP; GRM record; site inspection report.

		OHS5:	Risk to communities from open trenches along route	Prob: 2 Impact: 4 Risk: Medium	Accidents of people (children in particular) and animals falling into trench	OHS5: Plan and execute the works of digging trenching, laying pipes and filling with soil to avoid trenches left uncovered which could result in injuries. Sequentially fence off sections of excavation from general public along the route. Ensure safety of children who can be vulnerable as they see mounds of loose soil as a potential source of entertainment/play area. Manage movement of animals during site excavation work. Community outreach programme to raise awareness of dangers.	Zero site related accidents/incidents involving the community	PMU, Contractor, MSA, Engineer	Daily records; Weekly reporting to UNDP, MSA and SSE	Contractor's Method Statement; GAP; GRM record; site inspection report.
Emergency Management	PS3	EM1	Fire and Emergency management and prevention strategies implemented	Prob: 2 Impact: 4 Risk: Medium	Uncontrolled hazards affecting workers and local community at or near construction site	EM1.1: Flammable and combustible liquids bunding/storage areas to be designed in accordance with appropriate international standards	No incident of fire outbreak; No failure of water retaining structures; No major chemical or fuel spills; No preventable industrial or work related accidents; Provide an immediate and effective response to incidents that represent a risk to public health, safety or the environment; and Minimise environmental harm due to unforeseen incidents.	Contractor	Daily and maintain records	Contractor's EMP, personnel training record, incident/accident report/record The MSA and UNDP staff must be notified immediately in the event of any emergency, including fire or health related matter including those that have resulted in serious environmental harm.
						EM1.2: Fire extinguishers are to be available on site		Contractor	Daily and maintain records	
						EM1.3: No open fires are permitted within the sub-project area		Contractor, Field Coordinator, site supervisor	Daily and maintain records	
						EM1.4: Communication equipment and emergency protocols to be established prior to commencement of construction activities.		Contractor		
						EM1.5: Train all staff in emergency preparedness and response (cover health and safety at the work site). Coordinate with NDMO.		Contractor, Site Engineer	Daily and maintain records	
						EM1.6: Check and replenish First Aid Kits		Contractor, site supervisor	Daily and maintain records	
						EM1.7: Use of Personal Protection Equipment		All Personnel	Daily and maintain records	
						EM1.8: Implement emergency management plan as necessary	Emergency Management Plan in place and sub-project personnel trained in its use and implementation	Contractor	Daily and maintain records	
						EM1.9: Sub-Project personnel trained in Emergency Management plan	Emergency Management Plan in place and sub-project personnel trained in its use and implementation	Contractor	Daily and maintain records	

7.4 Operation Phase

Environmental and Social Issue	UNDP SES Policy	ESMP Issue No.	Anticipated risks/Impact	Probability of Impact and Impact	Indicators/Unmitigated Impact	Mitigation/Control Activity (and Source)	Post Mitigation	Responsibility	Frequency of Monitoring and Reporting	MoV
Ecology – Flora and Fauna	PS1	FF2	Introduced invasive flora and weed species	Prob: 3 Impact: 3 Risk: Medium	Growth of weeds	FF2.4: Seed is to be kept weed free	no introduction of new weed species as a result of construction activities ; and	O&M personnel	Maintain records	O&M reports, Post construction flora and fauna surveys
						FF2.5 Species selected for bioengineering and agroforestry should not be species that could become weed species in the future. Consult with MAF		MSA	Maintain records	
						FF2.6: Environmental weeds and noxious weeds within the sub-project footprints shall be controlled.	no increase in existing weed proliferation within or outside of any sub-project footprint as a result of construction activities.	O&M personnel	Weekly and maintain records	
						FF2.7 Maintain pipeline route free of trees (maintain shorter and seasonal vegetation instead) for a 1m radius to protect the pipeline	No trees along or within 1m radious of the pipeline route	O&M Perconnel	Monthly and maintain records	
Groundwater Quality	PS7	GW 1	Increase of gross pollutants, hydrocarbons, metals and other chemical pollutants into the groundwater and/or surface water environment.	Prob: 3 Impact: 3 Risk: Medium	Fuel spills, hazardous liquids, hydrocarbons and other chemical pollutants spilling and discharged on the site/onto the ground	GW1.1: Conduct regular groundwater quality monitoring in locations where the groundwater is likely to be impacted, including assessing the changes to groundwater quality.	No significant decrease in the quality and quantity of groundwater or surface water as a result of construction and operational activities in proximity to the sub-projects;	O&M personnel	Weekly and as required with reporting to MSA and UNDP	Periodic water quality survey results, O&M reports.
						GW1.2: Prevent contaminated surface water from entering aquifers via boreholes and wells – protect from runoff and flooding and keep surrounds clean. Clean spring surroundings; Check colour (turbidity); Check water quantity; Repair fence and clean surface drains; Check water quality; Wash and disinfect spring; Repair piping and valves; Repair cracks.	Water quality shall conform to any approval conditions stipulated by UNDP, MCIE/MSA and/or other government departments, or in the absence of such conditions follow a 'no worsening' methodology;	MSA and O&M personnel	Weekly	
						GW1.3: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.		O&M personnel	Weekly with reporting to MSA and UNDP	
						GW1.4: Check all vehicles, equipment and material storage areas daily for possible fuel, oil and chemical leaks. Undertake refuelling at designated places away from water systems.		O&M personnel	Daily and maintain records	
						GW 1.5: Implement ground water protection zones around wells and springs and implement relevant restrictive landuses in these zones for water sources protection e.g. minimize the use of herbicides, pesticides and other chemicals and use only biodegradable herbicides that have minimal impact on water quality and fauna. Periodically inspect exposed parts of wells for cracked, corroded, or damaged well casings; broken or missing well caps; and settling and cracking of surface seals; Install a well cap or sanitary seal to prevent unauthorized use of, or entry into, a well; Disinfect wells at least once a year according to the manufacturer's directions; Have wells tested once a year for coliform bacteria, nitrates, and other constituents of concern; Keep accurate records of any well maintenance, such as disinfection or sediment removal, that require the use of chemicals in the well.	Effective implementation of site-specific EDSCPs and other measures to protect surface and groundwater.	All Personnel	Weekly reporting to MSA and UNDP	
Surface Water Quality and quantity	PS7	W1	Elevated suspended solids and other contaminants in surface water systems	Prob: 3 Impact: 3 Risk: Medium	Increased suspended sediment and reduced water quality near the intake, along channel route and near river crossings.	W1.2: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids for O&M should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	By following the management measures set out in the ESMP the sub-project will not have a significant impact on water quality across the broader area.	O&M personnel	Weekly with reporting to MSA and UNDP	Periodic water quality survey results, O&M reports.
						W1.3: Conduct regular surface water quality monitoring in locations where the surface water is likely to be impacted including assessing the changes to water quality.		MSA and O&M personnel	Weekly and as required with reporting to MSA and UNDP	
						W1.4: Schedule O&M works to ensure that disturbed areas are revegetated and stabilised progressively and as soon as practicable after completion of works.		MSA and O&M personnel	Maintain records	
						W1.5: O&M materials will not be stockpiled in proximity to aquatic environment that may allow for release into the environment. O&M equipment will be removed from in proximity to the aquatic environment at the end of each working day or if heavy rainfall is predicted		MSA and O&M personnel	Maintain records	

	PS1	W2:	Changes to surface water system regime	Prob: 5 Impact: 3 Risk: Medium	Inefficient use of water and leakages leading to losses, poor distribution along the length of the scheme, leading to disputes. Overuse leading to source depletion. Changes in water table over time leading to adverse impacts on water quality and quantity.	W2.1 Develop and implement a Water Management Plan for the operation of the scheme. Efficient use of water supply systems should be practiced to avoid water loss and to control vector breeding and water related diseases.	Water supply scheme properly operated No significant or adverse effects on water quality or quantity No water use/access disputes among the water users	MSA and O&M personnel	Maintain records	Water Management Plan and periodic report
						W2.2 Training of the community and O&M personnel in water management of the water supply schemes and awareness of hygienic handling of water and on household water treatment/purification methods should be introduced		MSA and O&M personnel	Maintain records	
						W2.3 Ongoing economic evaluation of water consumption requirements and utilization to ensure continued efficiency of the water supply schemes to meet (changing) needs. Determine the economical and technical restraints (e.g., cost of equipment, operation and maintenance costs, cost of alternative sources, availability of power) and treat if necessary and feasible.		MSA and O&M personnel	Maintain records	
Air Quality	PS7	A.1	Increase in dust levels at sensitive receptors	Prob: 1 Impact: 3 Risk: Low	Increased dust near the settlements from operation and maintenance activities	A1.1: Implement effective dust management measures in all areas during operation.	No reduction in air quality due to movement on and off site of operations and maintenance vehicles	O&M personnel	Daily and maintain records	Periodic air-quality monitoring reports
Noise and Vibration	PS7	N1:	Increased noise levels	Prob: 1 Impact: 3 Risk: Low	Increased noise near the settlements from operation and maintenance activities	N1.1: Select O&M plant and equipment and specific design work practices to ensure that noise emissions are minimized during operation.	No increase in background noise levels from use of O&M equipment or movement on and off site of operations and maintenance vehicles	O&M personnel	Maintain records	Periodic noise monitoring reports
						N1.2: Specific noise reduction devices such as silencers and mufflers shall be installed as appropriate to site plant and equipment to limit allowable noise levels to Leq55dB(A) during O&M. Communities should be informed of scheduled times of any O&M works (periodic or emergency) that may be required		O&M personnel	Maintain records	
Erosion, Drainage and Sediment Control	PS1	E1:	Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities	Prob: 1 Impact: 3 Risk: Low	Loss of soil material and sedimentation where revegetation not yet developed	E1.5: Schedule/stage O&M works to minimise vegetation disturbance and during periods of lower rainfall and wind speeds.	No build-up of sediment in the aquatic environments and/or surface and/or groundwater as a result of operation activities; No degradation of water quality on or off site; All water exiting the sub-project site and/or into groundwater systems passes through best practice erosion, drainage and sediment controls; Effective implementation of site-specific EDSCP.	O&M personnel	Maintain records	O&M schedule, water quality periodic reports

		E3:	Disposal of excess soil/silt	Prob: 1 Impact: 3 Risk: Low	Siltation caused by soil erosion or sediment spill, entering the water sources and pipes can occur both from natural causes such as heavy runoff and human behaviour such as overgrazing or deforestation. Silt in the water collection system and pipeline may need to be periodically removed.	E3.1: Silt removed during maintenance is to be beneficially reused e.g. composted, returned to farmland, brick making etc. Silt should be tested to confirm suitability for proposed use	Effective drainage control on site	O&M personnel	Maintain records	O&M reports
Community Health, Safety and security	PS3	CH1	Increased vulnerability to water borne diseases	Prob: 1 Impact: 3 Risk: Low	Contamination of the water sources resulting in water borne diseases	CH1.1: Regular water quality monitoring. For all sources (including wells and springs). Regular monitoring and restriction/zoning of landuse practices upstream of water sources Awareness of hygienic handling of water and on household water treatment/purification methods should be introduced Ensure community is achieves and maintains ODF status	No cases of water borne diseases originating for water supply scheme	All personnel	Maintain records	O&M reports

7.5 Complementary ESS measures

In addition to the above Environmental and Social Risks/Impacts and Mitigative Measures and Monitoring Plan, GCF's applicable findings and recommendations for the review of sub-project L-RR-06 proposed under different Environmental and Social Safeguards have been take into account in this sub-project ESMP and will complement the measures outlined above. They include the following:

Environmental and Social Safeguard (SSE)	Recommendations/clarification by GCF	Response
ESS2 (Labor and working Conditions)		
Labor Requirements and labor Laws	Labor Requirements and labor laws. Aside from contractor labor requirements, it should ensure that workers required in the project management side or those that will be assigned or hired directly to work in the subproject by the government will be provided with adequate worker protection in accordance with international labor standards in terms of basic workers' rights (e.g., rights to clear and understandable terms of employment, regular working hours, overtime pay, equal treatment or non-discrimination of hiring and giving of benefits, freedom of association and collective bargaining, grievance redress). It should also include those that may be engaged with associated activities in the catchment area where engagement of community counterpart/contracted labor, including volunteer labor or family labor, which may not be subject to formal laws, may occur.	The relevant Articles/clauses from Labor law No.4, 2012 of The Democratic Republic of Timor-Leste regarding adequate worker protection in terms of basic rights will be included as Annex to the contracts with all parties involved in the sub-projects and the compliance will be monitored during the monitoring visits and Grievance Redressal Mechanism. For example, Article 8 of the Labor law provide details about the prohibition of forced labor which will be complied by all the concerned parties. The sub-project will provide the appropriate trainings to all the stakeholders before the start of the sub-project on the relevant standards/laws and its compliance.
Risks related to ESS2 standards	Risks relating to ESS2 Standards. It is thus critical that the risks as regards potential for non-compliance of the subproject with the labor and working condition standards be adequately addressed with management interventions/mitigating measures. This could include, in addition to measures to ensure health and safety in the workplace and prevention of child labor, the provision of management measures to ensure that basic workers' rights (as enumerated above) are upheld and respected. Should the risk of trafficked/forced or bonded labor is significant, the Responsible Parties should provide measures that would ensure that such types of labor are not engaged in the subproject, including by contractors and their subcontractors (e.g., drainage, revegetation works, etc.) and key suppliers of raw materials (e.g., gravel, aggregates, or bricks).	In addition to the measures suggested in Table above and Annex 7 (Occupational Health and Safety Management Plan (OHSMP) regarding labor and working conditions standards, relevant clauses from Labor Law No.4, 2012 will be included in contracts with the responsible parties (contractors and their suppliers) and will be regularly monitored by the sub-project team for the compliance. For example, Article 34-37 of the Labor law (2012) provide details about the Occupational Safety, Hygiene and Health which will be followed by all the responsible parties.
OHSM expansion to include additional areas	The current OHSMP may be therefore expanded to ensure that the following are considered and that they will be adequately managed: (a) *Non-discrimination and equal opportunity;* (e) *Freedom of association and collective bargaining;* (b) *Clear terms of employment;* (c) *Workers shall have the right to regular and prompt payment of wages;* (f) *Prohibition of child labor;* (g) *Prohibition of forced and/or bonded labor;* and (h) Establishment of a *Grievance redress mechanism for workers*.	The additional proposed areas have been included in OHSMP (Annex 7).
ESS3 (Resource Efficiency and Pollution control)		

	Given that there could be domestic (liquid and solid) wastes from labor camps that will need to be disposed of properly and construction activities will also generate waste soil materials (e.g. topsoil, demolished structures, tree stumps and other organic materials which are unsuitable for use as embankment fills) a suitable disposal area for excess soil materials that are deemed unsuitable for embankment fills should be identified and used for the subproject	Additional information added to Construction Phase ESMP above updated where needed. Suitable accessible waste disposal sites will be identified at start of the sub-project by the contractor in consultation with the sub-project team and relevant government authorities where waste material from both labor camps and construction site will be timely and properly disposed at dumping site/s designated by the Municipality and as per the Articles 39-42 of the Democratic Republic of Timor-Leste Decree Law No: 26/2012 of 4 July 2012 Environment Basic Law.
ESS4 (Community Health, Safety and Security).		
	It is however recommended that in the maintenance of the road right of way (and easements), the Responsible Parties (RP) implement an integrated vegetation management (IVM) programme to avoid excess vegetation's interference with vehicle travel as unchecked growth of trees and plants may cover signals and signs, restrict motorist and pedestrian visibility, and branches can fall onto the road, or nearby buildings and power lines (if any) and cause damage to these assets.	Responsible parties will implement Integrated Vegetation Management (IVM) programme on road sides and critical vulnerable points exposed to erosion and landslides according to international standards such as the selection of appropriate species which should not obstruct view of the motorists, preference of native trees, planting of trees at least 3 meter away from outer road boundary with at least 3 meter plant to plant distance depending on the height of the tree, 141ulti-layered trees plantation on sides of the road such as higher trees on the outside followed by medium trees in the middle and shrubs/grasses closer to the road complemented by bio- engineering measures for soil stabilization. The outer boundary of the road will be considered 5.5 meter from the center point of the road as per the government rural road standards to allow expansion of the road required in future without any damage to the plantation. No trees will be planted near the power lines.
ESS5 (Land Acquisition and involuntary settlement)		
	It is recommended that once the staking of the road development has been done, an inventory of the affected structures, crops and economic trees should be undertaken. If compensations are waived, their owners should be given sufficient time to harvest any standing crops and be allowed to salvage materials and logs after the trees have been cut and the structures have been dismantled. Furthermore, where family assets are affected, the Responsible Parties should aid the affected households in terms of rebuilding or restoring the structure displaced/damaged by the road rehabilitation.	where such assets are existing will be recorded and owners will be given enough advance notice to take care of these assets. The sub-project or responsible parties will not provide any support to the affected households in terms of rebuilding or restoring the displaced/damaged structures due to road irrigation schemes as all the rehabilitation work will be mainly done on existing alignement. Extreme care will be taken by responsible parties to avoid damage to the assets on the downside of the irrigation scheme in hilly areas and for any damage due to negligence, the contractor will be responsible. The sub-project will train the responsible parties to mitigate any damages from the scheme. The Stakeholder Engagement Plan and the GRM also provide mechanisms for communities to formally raise concerns regarding assets that could be affected during the rehabilitation.
ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources		
	Given that Activity 2.3 include some complementary catchment management and rehabilitation activities, please ensure that these are also included as part of the long-term measures in the ESMP to mitigate the potential negative impact of the road rehabilitation activities on the overall ecology of the area.	Complementary catchment management and rehabilitation activities, are reflected as part of the long-term measures in the ESMP to mitigate the potential negative impact of the road rehabilitation activities on the overall ecology of the area..
Grievance Redress mechanism		

	The GRM procedure for collecting, recording, and resolving grievances may need to be further described in a clear stepwise manner so that it can be readily followed by the stakeholders. The GRM should also have provision to elevate unresolved grievances from the subproject/municipal level to the project/national level if there is such a project or national-level GRM including possibilities to raise grievances to the AE's Stakeholder Response Mechanism (SRM) and the GCF's Independent Redress Mechanism	Details added under section 7.5 below

7.6 Residual risks after mitigation

The environmental and social impact assessment found that there will be no long-term negative environmental and socio-economic impacts associated with the planned sub-projects. In fact, the types of structural and other physical works that will be implemented under the sub-projects will provide climate resilient infrastructure which will strengthen resilience of the beneficiary communities through implementation of engineering “best practices” and climate resilient engineering technologies, therefore the anticipated impact would be minor and are likely to have temporary and/or minimal environmental impacts.

The sub-project will also bring about beneficial change to the local communities and their livelihoods by providing small scale resilient structures along with more stable hillsides for agricultural use, reducing erosion and sedimentation and downstream environmental impacts, slope stabilization, water outlets for more efficient management and control of water discharge to the fields and drainage improvements that would be carried out with community participation.

The design of the rural water supply infrastructure has taken into account the social and environmental safeguard (SES) policies of the Accredited Entity (UNDP) that will include avoiding and/or minimizing environmental impacts through application of good engineering design and sound implementation measures.

The environmental checklist has been written to incorporate good practice guidance previously given to ANLA-SSE.

Following implementation of the ESMP, the sub-project is expected to have the following residual risks which have low to negligible, are short-term/temporary, reversible and localised.

Impact	**Ranking**
Construction	
Deterioration of air quality	Low to negligible, short term, reversible, local
Noise and vibration	Low to medium , short term, reversible, local
Water quality	Low to negligible, short term, reversible, local.
Deterioration of soil quality	Low to negligible, short term, reversible, local.
Deterioration of soil stability (erosion and landslides)	Low
Impact on flora/vegetation	Low, local, short term (temporary), reversible. Affected species are not rare, endemic, endangered, Red List or otherwise protected.
Impact on fauna	Low, temporary, reversible, local. These will be - residual risk of impact on aquatic life due to temporary impact on water quality (mainly increase of turbidity). None of affected species are rare, endemic, endangered, Red List or otherwise protected.
Landscape and visual alteration	Low to negligible, temporary, local, reversible
Temporary use of private land, loss of harvest	Negligible, short term, reversible, local

7.7 Implementation of the ESMP

7.7.1 Responsibilities and Institutional Arrangements

The key institutions, organizations and stakeholders relevant to the environmental management and that will have responsibilities for the implementation of this ESMP are set out below.

The overall responsibility for ESMP implementation lies with the Ministry of State Administration, as the Responsible Party (RP). The Municipal Administration is the contracting authority and will establish the contract with the local contracting company for the implementation of the water supply scheme rehabilitation/construction.

UNDP is supporting the RP and has established a Project Management Unit (PMU) based in Dili, to support overall project implementation. The Field Coordinator and Climate Change and Environmental Office of the PMU are based in the Municipalities and will support Municipality and the local authorities to monitor the implementation of this plan.

A summary of the key functions for the sub-project implementation and environmental safeguards and detail on the responsibilities of each function is as follows:

Table 7-2: Summary of the Key Functions and Responsibilities for the ESMP

No	Name	Roles and Responsibilities
1	Ministry of State Administration (MSA)	• Responsible Party (RP) for the sub-project. Overall responsibility for sub-project design and implementation and post-construction operation and maintenance.
2	Secretary of State for Environment (SSE)	• Implementing Partner for the project. On behalf of the GoTL, SSE ensures that the sub-project, complies with the provisions of the requirements for compliance with the environmental laws and regulations
3	National Environmental Licensing Agency (ANLA)	• Screening of the sub-projects and issuance of the environmental permits/licenses in accordance with ELL DL No. 5/2011 • Monitor compliance with the requirements of the SES and ESMP. • Reports on the results of the environmental monitoring and shall conduct validation and provide technical guidance on quality monitoring, when necessary.
4	Municipality Administration	• Contracting Authority enters into the contract with the local contractor for implementation of the works. • Municipality participates in the monitoring of the Contractor performance in ESMP implementation and involved in grievance resolution in accordance with the established grievance redress mechanism.
5	UNDP	• Supports GoTL (Ips, RPs and Municipal Authorities) with implementation of the sub-project through the established PMU • Reviews and approve the ESIA, ESMP prior to commencement of the construction works. • Supports the PMU, regular monitoring and annual reporting on the implementation of the ESMPs.
6	Project Management Unit (PMU)	• Supports MSA to oversee the environmental compliance and reporting requirements, by MSA and the Municipality, to ANLA. • PMU Team including the Project Manager, National Project Engineer, Environment Officers facilitate the monitoring and

		reporting on the implementation of the ESMP to National stakeholders such as MSA, SSE. • Regularly monitor the mitigation and protection measure during implementation and submit regular reports to UNDP CO, SSE, ANLA, MSA.
7	Local Authority	• Municipality and Suco Council to participate in the monitoring of the Contractor performance in ESMP implementation. • Chief of Suco and Aldeias shall be involved in grievance resolution in accordance with the established Grievance Redress Mechanism (GRM). • Lia nain (traditional/cultural leader) engaged in cultural matters and in case of chance find and having to activate the CFP
8	Field Coordinators of PMU	• A daily environmental checklist be completed at each work site and maintained within a register and logged in the on-site logbook. • A weekly environmental checklist is to be completed and will include reference to any issues identified in the daily checklists completed by the Field Coordinators. • The completed checklist is to be forwarded to MSA, SSE and PMU for review and follow-up if any issues are identified. • supports the Municipality Environment Officer to conduct inspections and spot checks to monitor the performance of the Contractor in implementing the ESMP. • Coordinate monitor and report on the management and resolution of grievances and effectiveness of the GRM. Conduct appropriate consultation and monitoring of effect of construction on affected people. • Oversee observance of the GRM and prepare the grievance redress reports.
9	Civil Works Contractor	• Prepare and submit Method Statement detailing the sub-project implementation plans and construction methods, site layout and organization, workers and community safety and health and other related actions for full compliance with the ESMP • Implements all environmental mitigation and protection measures, conduct environmental monitoring activities • Participates when needed and observes the GRM process in addressing complaints • Participates in regular monthly construction site meeting • Adherence to the CFP in the event any unknown site or objects of cultural and heritage value has been discovered • Prepare and submit monthly and quarterly reporting on the ESMP implementation and compliance
10	CSOs/NGOs	• Participates in any consultation that may be required during the implementation or post-construction maintenance period • Acts as an independent third party in the implementation and post-construction monitoring of the sub-project
10	Beneficiaries, host community	• Supports the contractor in the implementation of the environmental mitigation and protection measures • participates in any meeting or consultation that may be required during the implementation or post-construction maintenance period

7.7.2 Contractor Responsibilities

The appointed Contractor will also be responsible for implementing the Environmental and Social Management Plan (ESMP). The ESMP is legally binding and shall be always adhered to. The Contractor

shall take the necessary action to ensure that temporary site establishment and construction activities adheres to the requirements stipulated in the ESMP. The Contractor will be required to submit a Method Statement detailing construction activities and what measures will be implemented to prevent the pollution of streams, rivers and adjacent surface and groundwater resources that can potentially occur because of fuel spills, sewage from the temporary toilets and other deleterious materials from the construction site.

Where in the opinion of the Engineer, the Contractor has not adhered to these requirements, the Contractor shall rectify the damage at his cost and to the satisfaction of the Engineer. The selected contractor will be required to comply with the requirements outlined in the ESMP during implementation, which will be monitored through audits and regular monitoring.

The Contractor is to appoint an Occupational, Health, Safety and Environment Representative who will be responsible for OHS on site. When submitting the Work Program, the Contractor is also to submit a Work Method Statement and relevant plans that indicate the various interventions required to protect the environment including (See Section 7.11 for details of Contractor Plans to be prepared):

a. Protection against dust, landslides, and erosion

b. Bio-Engineering Interventions

c. Re-instatement of Quarries and Borrow Pits

d. Adequate sanitary and ablution facilities to be provided to workers

f. Environmental awareness training to all site personnel.

g. Disposal of waste in a matter that will not endanger the environment.

7.8 Monitoring

To ensure compliance with the ESMP and that all the mitigation actions are completed accordingly, regular compliance monitoring and site observations will be carried out by the project engineer, environment officer and field coordinator. The objective of the monitoring activities is to ensure compliance with the measures as outlined in the ESMP, timely identification of any unforeseen negative impacts or when an impact indicator approaches a critical level and timely reporting to the respective stakeholders. Monitoring of the ESMP implementation includes site inspections, reporting and photographic documentation designed to assess the contractor's compliance with the ESMP and other applicable regulations. It is also anticipated that additional inspections would be required in response to complaints and issues raised by local communities.

The costs for monitoring during the construction works include the salaries of the Project Engineer, Field Coordinator and Environment Officer's and costs for traveling to the site with motorbike and vehicle, mobile communication and camera. The responsibilities for implementation and monitoring of the ESMP are detailed under responsibilities and institutional arrangements.

7.8.1 Monitoring Plan

Table 7-3: Monitoring Plan

Issue	What parameter is to be monitored?	Where is the parameter to be monitored?	How Is the parameter to be monitored?	When is the parameter to be monitored? (Frequency)	Institutional responsibility
Contamination of surface water during construction (turbidity)	Water Quality parameters of surface according to relevant standards	Next to the worksite, upstream and downstream the work area. At all river crossings and at source.	Visual control of turbidity. Instrumental analysis is deemed advisable.	During construction, daily	MSA/ Construction supervisor
Contamination	Organic	Sampling at water	Water	During construction	MSA/

of surface water during construction	compounds, lubricants, fuel, solvents, heavy metals, pH value, mineral oils	source and downstream of the worksite	quality analysis	works where the risk of pollution is identified or monthly (min.)	Construction supervisor
Air pollution from improper maintenance of equipment/ machinery (general)	Exhaust emissions; Status of technical maintenance of vehicles/machinery	Construction sites	Visual inspection; Control of records on technical maintenance	Unannounced inspections of the status of technical maintenance of machinery/vehicles, during construction works	MSA/ Construction supervisor
Dust pollution	Visual presence of dust at the worksite	Construction sites	Visual monitoring	Daily during construction, in dry weather in particular	MSA/ Construction supervisor
Impacts created by material transport – dust, noise	Compliance with requirements to observe working hours; Complinace with haul routes; Use of dust suppression methods (where required)	Worksite / haul routes	Inspection, supervision	Unannounced inspections during work	MSA/ Construction supervisor
Noise from works at recipients next to the sub-project site	Noise levels; Compliance with requirements to observe working hours; Status of technical maintenance of machinery: No idling with switched gear	Nearest resident	Noise measuring equipment; Visual inspection; Control of records on technical maintenance	On any complaint	MSA/ Construction supervisor
Noise disturbance (workers)	Noise levels at the worksite; Compliance with requirements to observe working hours; Status of technical maintenance of machinery: No idling with switched gear; Use of PPE whenever required.	Worksite	Noise meter	During construction daily; Unannounced inspection; Upon receipt of complaints.	MSA/ Construction supervisor
Slope stability	Status of slopes	Construction sites	Stability , identification of visual traces of possible erosion	During construction, after adverse weather events(storm, gale)	MSA/ Construction supervisor
Impact on topsoil	Striping of the topsoil; Stockpiling; Protection from	Worksite, topsoil storage area	Inspections; observation	During removal of the topsoil layer and preparation of the sites, After	MSA/ Construction supervisor

	erosion and washing away.			stockpiling.	
Contamination of soil during construction – oil/fuel spills	Heavy metals and greases and oils	Construction sites	Visual observation	During construction - daily. Unannounced inspections during construction,	MSA/ Construction supervisor
Impacts on trees near the working area	Are the trees located close to the sub-project area protected by fence.	At sites where trees and forests are located along the construction site.	Visual inspection, Supervision	After start of construction works, weekly control of the status of vegetation and protection fencing	MSA/ Construction supervisor
Waste	Tidiness of the sites; Timely, regular removal of waste from the site	Worksites/subproject area	Visual inspection	During construction, daily	MSA/ Construction supervisor
Possible loss or damage to cultural resources in case of Chance Finds	Presence of chance finds	Construction site	Supervision during earth works	During earth works	MSA/ Construction supervisor
Traffic disruption (works in residential area)	Complianace with agreed off-site traffic plan (Traffic management plan) – consideration of background traffic level and peak hours	Residential areas	Inspection; observation	Before works start; once per week at peak periods	MSA/ Construction supervisor
Impact on private properties and land	Keeping within the boundaries of the worksite; Impact on properties nearest to construction site (nondeliberate damage).	Areas/properties nearest to the worksite	Inspection; observation	During construction	MSA/ Construction supervisor
OHS	Use of personal protective equipment (PPE) relevant to the task; Availability of first aid kits; Training/briefing records; Organization of traffic on the construction site; Keeping to the safety rules relevant to the type of activity	Worksite	Inspection; interviews	Unannounced inspections during construction and upon complaint	MSA/ Construction supervisor

7.9 STAKEHOLDER ENGAGEMENT

A Stakeholder Engagement Plan (SEP) has been prepared for the sub-project as per Annex 2. The stakeholders' consultation is enshrined in the Timorese Constitution, and is part of the decision- making process, which allows integration of diverse views and perceptions of the sub-project by stakeholders, creating conditions suitable for implementing the sub-project and its integration at community and national levels.

7.9.1 Stakeholder Consultations

Prior to detailed design and implementation, extensive consultations are held with stakeholders to gather information about the selected sub-project site and to get the consensus and involvement of the various players, including identifying and coming up with the mitigative measures to address social and environmental concerns. The consultations include women and other disadvantaged groups. During the stakeholders' consultations and engagements with local authorities, the overview of the proposed sub-project and objective of the ESIA are presented. Furthermore, the challenges that could impede the implementation of the sub-project and the support needed from all stakeholders to ensure smooth implementation are also discussed.

7.9.2 Objectives of the Consultations

The objectives of the stakeholders' consultations are to:

- to solicit the views and concerns of local community members, sub-project's beneficiaries and stakeholders for the planned water supply scheme rehabilitation/construction sub-projects so that the feedback received can be used to mitigate and address the issues identified in the early stages of sub-project planning and during implementation.
- gather local and traditional knowledge that may be useful in the planning, designs and decision-making processes and that can be incorporated in the project implementation accordingly.
- ensure that important impacts are identified early and not overlooked and the overall benefits of the sub-project for local community is maximized
- provide a forum for the early identification of any critical environmental and social issues and in particular the people who are likely to be affected by the sub-project
- provide an opportunity for the public to provide input and feedback to influence the designs and implementation in a positive manner; and
- increase the local community buy-in and ownership of the sub-project

7.9.3 Consultation Process

The sub-project has been discussed with a wide range of stakeholders including relevant government departments, academia, CSOs, local and municipal authorities, local leaders, residents and host community, minority, and vulnerable groups. Extensive on-the-ground consultation are undertaken with municipal and local authorities during the pre-construction technical assessments, and in preparation of the technical engineering designs for the sub-project. Throughout the sub-project's implementation and defect's liability period, consultation with any affected communities will continue.

During the consultation the team also disseminate information about the sub-project and its expected impacts, during the various phases of the sub-project cycle (i.e. pre-construction, construction and post-construction) with the community to get consensus on the main social and environmental concerns related to the designs and implementation of the water supply scheme sub-project.

Key stakeholders for this sub-project are identified and consulted including national and municipality government representatives, local authorities, chief of the villages and sub-villages and the local community members and residents along the road corridor.

The ***public consultation*** is done twice. The first consultation is the engineering detailed field assessment conducted in village office in the suco, and the second consultation is the sub-project screening activity which is done jointly with PMU and Official Staff from ANLA. For both public consultations there is participation from representatives from municipal level, administrative post, xefe suco, xefe aldeia, suco consul and youth represent (Men and women).

During the public consultation, information related with the environmental issues and documents are obtained that will be support or submitted from suco level such as, declaration letter, list of the landowner and list of the farm owner to support the sub-project document and submitted to ANLA to get the classification of the environmental license. In addition to the meeting also introduces the GCF sub-project to the community leader in municipal, administrative post and suco level.

Public consultations are also used to extract the relevant information from the different points of view towards the sustainable implementation of water supply systems. The outcomes of key informant interviews and focus group discussions will be utilized in the process of identifying the strengths, weaknesses, opportunities, and threats for the sustainable implementation of the water supply systems.

Government stakeholder consultation
Key informant interviews are conducted to obtain a thorough understanding of the various socioeconomic aspects of the sub-project areas. The key officers attached to the respective AP (e.g. AP administrator, Public Health Inspector, Technical Officer) are interviewed in a collective meeting. The consultations aim to fully characterise/confirm the following aspects of water use and availability within each sub-project area:

1. Access to water by types of water supply:
    a. Common protected well
    b. Common unprotected well
    c. Private protected well
    d. Private unprotected well
    e. Shared protected well
    f. Shared unprotected well
    g. Surface water
    h. Standpipe
    i. Water supply scheme
    j. Other

As-needed discussions are also held with Municipal Administrator, and the Municipal Director of PDIM as well as representatives of beneficiary sucos on these issues.

2. The treatment methods used to treat raw water by communities:

    a. Boiling
    b. Filtration
    c. Boiling + Filtration
    d. Traditional Methods
    e. Other

3. The sanitation facilities in the localities. Number and types of existing latrines in sub-project area
    a. Water sealed toilet with cistern
    b. Water sealed toilet without cistern
    c. Pit latrine
    d. Temporary latrine
    e. No latrine/disused/degraded latrine

Gender Focus group discussions (G-FDG) consultation

To fully characterise water usage in each community, gender specific roles and responsibilities with regard to collection and use of water are fully examined. Consultation meetings will characterise the ways in which women, children and disadvantaged groups currently access water for daily use. A public consultation will be carried out representing women's involvement and participation in water supply system implementation and management. Every G-FGD consultation will ensure a minimum of 60% female participants with a wide range of ages as possible. The women group discussions will examine whether the current water supply arrangements are satisfactory to meet their hygiene and health needs and those of children and infants and identify any potential risks to health due to contaminated water consumption. The G-FDG consultation will also identify women's capacities and knowledge about water sanitation which is a key factor in sustainability and safety of rural water supply systems, and identify any training/awareness raising needs.

The G-FDG aim to ensure: a) sub-project planning and design reflect differences in gender needs related to water and sanitation, to increase the likelihood of sub-project effectiveness, sustainability and impact; b) promote active participation of women in WS sub-project design, implementation, decision-making and long-term management of WS schemes; c) the sub-project improves access to water and sanitation facilities which will improve the quality of life for women and girls; d) reduced labour of water collection, the burden on women and girls who are responsible for this task.

As the main outcome, women-centered focus groups discussions will identify women's roles in managing the water supply to ensure that women are willing to take a leadership role in the implementation and management of water systems. The aim is to empower women by improving their technical skills, status, and income through engagement and leadership of the WS management.

These consultations will be used to inform socio-economic, water demand requirements, and water availability assessments which include technical modelling of hydrological and hydrogeological water availability under baseline and climate change conditions for dry and wet seasons which forms part of the technical feasibility of the ESIA. Importantly it enables full characterisation environmental and socio-economic risks and opportunities of each sub-project and identification of site-specific safeguards and sustainable design solutions.

7.9.4 Consultation and Coordination with national and local authorities

Various consultation meetings are held with the local authorities on the sub-project including the Administrator of Municipality Administrative Post and Director of PDIM in the Municipality. The Administrator and local authorities confirmed that the suco and all community will collaborate with UNDP and contractor to ensure the sub-project implementation will be successful and benefit the community. So far communities have used sub-optimal water supply systems which suffer from damage from climate hazards like drought, which limits was availability, floods which damage infrastructure and impact sources. It is hoped that through this sub-project the communities will have access to domestic water supply systems which will bring significant benefits such as: increased safe and reliable water supply; improvements in health; improved school enrolment; improved environmental conditions; improved standards of living; reduced resource use conflicts; employment opportunities/Income generation; local economic development; improved participation of women and youth; resilient and sustainability of infrastructure; increased food and nutrition security due to improved food hygiene; increase in land value within the sub-project area, due to availability of domestic water supply; community sub-project governance during implementation and O&M. The climate resilient rehabilitation/construction of the water supply schemes will bring about more positive benefits to the people and communities. Importantly consultation with national and local authorities is also used to confirm the official ODF status of the communities within which the water supply scheme sub-project are being implemented.

7.9.5 Consultation and Coordination with other authorities

The objectives of the stakeholder consultation/other Authorities process are to disseminate information on the sub-project and its expected impact, long-term as well as short-term, within the community and to gather information on concerns and other relevant issues so that the feedback received can be used

to mitigate and address these issues in the early stages of sub-project planning and during implementation.

Meetings are held with the Administrator post, Director of PDIM for the Municipality within the local authority, a position with additional responsibility towards the definition of environmentally protected areas. The Administrator and local authority confirm that the water supply scheme is not within a protected area, and that although water supply scheme rehabilitation/construction along a existing alignment does not pass through a protected area the sub-project should be undertaken with great care and relevant studies, to ensure that it provides the benefits to the communities in the water supply scheme service areas, albeit with adequate environmental safeguards and monitoring.

Consultation is also been carried out with other institutions (e.g. Municipal Service for Water and Sanitation, Bee Timor-Leste (BTL-EP) to synchronize the list of sub-projects planned for implementation.

7.9.6 Stakeholders' consultation with residents/community – Focus Group Discussion

Stakeholders' consultation with the host community and local authorities are also conducted as FGDs ensuring gender inclusion and responsiveness (as described above). The views expressed are incorporated into this ESIA and the sub-project design.

A summary of the issues and/comments raised by the various stakeholders and how the issues were and/are to be addressed by the sub-project are included in the sub-project stakeholder engagement summary of the project document for each water supply scheme.

7.9.7 Key Findings of the Stakeholder Consultations

The sub-project concepts were derived from the PDIM Planning Framework, a national bottom-up process that allows communities to develop infrastructure proposals and feed them up through the various administrative levels from Aldeia to Suco to Municipality. In this way, the sub-projects are based on community needs and aspirations and there is high ownership of the concepts even before funding is available.

During the GCF SRC project development and design phase there was considerable stakeholder engagement, which was documented as part of the funding proposal. Further consultation are being undertaken as part of the detailed engineering design, ESIA of each sub-project.

The views collected from the consultation process of water supply sub-projects can be summarised as follows:

- The residents of the local communities that will received WS infrastructure sub-projects expressed their appreciation and gave the assurance to fully support the successful implementation of the sub-project and are aware of the positive social, economic and health benefits that the construction of water supply system will bring to their community.
- The sub-project implementation follows the Municipality Integrated Development Programme (PDIM) planning framework. This water system has long been the priority of the suco/community, but it was not implemented.
- Local communities agreed that no compensation is required for any disturbance or encroachment that will occur because of the construction although this will be reduced to the minimum. This will be reconfirmed with communities from each sub-project based on a full site-specific assessment, consultation and participation of local authorities and residents of the host community during the technical assessment and surveys. The declaration letters will be obtained from IPs representatives to this effect following the IP engagement process.
- Residents are aware of the positive social, economic and health benefits that the construction of water system will have on their lives and the resultant climate resilient

improvement and safeguard for the community and its physical assets.

- Local community members did not express dissatisfaction with the issues that will arise during the construction works such as the noise from equipment and dust.
- Residents/community also see this as an opportunity to give full support and voluntarily contribute towards the implementation of the sub-project for the development of the community and long-term improvement in their livelihood.
- As is customary in Timorese culture, before the sub-project start physical construction works on the ground, the cultural ceremony needs to be done at the time of commencement and completion of the construction works of the sub-project in consideration of the holy (lulik) site that is near to the sub-project site.

7.10 Grievance Redress Mechanism (GRM)

Grievance Redress Mechanism (GRMs) is defined as organizational systems and resources established by national government agencies (or, as appropriate, by regional or municipal agencies) to receive and address concerns about the impact of their policies, programs and operations on external stakeholders. The stakeholder input handled through these systems and procedures may be called “grievances,” “complaints,” “feedback,” or other functionally equivalent term.

To ensure timely and effective addressing of any issues or problems that may be encountered during implementation, a robust Grievance Redress Mechanism (GRM), has been established at two levels (Project level and External Resolution Mechanism) to address the grievances of the stakeholders of the sub-project. The GRM consultation with municipality and local authorities is held and with the committee and established and adopted in the Municipality during the pre-construction phase of the sub-project.

7.10.1 Project level GRM

For each individual water supply scheme level, GRM will be established at village/Post Administrative level where the scheme is implemented with the participation from the relevant communities through a consultative and participatory process with the support from local and municipal authorities. The formation and operation of GRM committee with representation from all segments from the community including women, youth, elderly and vulnlerable groups will take into consideration the local customary mechanisms such as tara bandu for representation and conflict resolutionThe function of the GRM will be to support sub-project in registering and addressing any complaint that might arise during the individual scheme implementation. The structure of GRM to be developed for each scheme at village/Post Administrative level is presented in Table 7-4. Annex 3 gives the full details of the GRM procedures.

Table 7-4: GRM Structure for each sub-project

Nu.	Name	Position /title	Position in GRM committee	Phone Number	Email (if applicable)	Address
1			Chairman			
2			Vice			
3			Secretary			
4			Member			
5			Member			
6			Member			
7			Member			

8			Member			
12			Member			
13			Member			
14			Member			

Any person having grievance or complaints will have the opportunity to submit their grievance/complaint either via a grievance form or verbally and pursuant to the mechanism and committee established. The GRM will as much as possible, try to resolve complaints and/or grievances on terms that are mutually acceptable to all parties. When making a complaint and/or grievance, all parties must always act, in good faith and should not attempt to delay and/or hinder any mutually acceptable resolution.

The GRM committee will be established at PMU level comprising of the following project staff who will ensure the implementation of GRM mechanism; monitoring of the mechanism; collection, documentation, assessment and reporting of grievances and resolution.

S.No	Name	Position/Title	Phone Number	Roles and Responsibilities
1	Jehangir Khan	Project Manager	7729826	Oversight and resolution of grievances
2	Subarna KC	Team Leader Infrastructure	77755810	Address reported grievances at site level
3	Nidia Alves da Costa	Gender, inclusion and social safeguarding Officer	77965540	Ensure compliance of the mechanism and safeguarding concerns are addressed
4	Sergio Gaspar Olo Borromeu	Monitoring, Evaluation & Communication Officer	77718199	Support establishment of GRM, monitor and reporting
5	Angelo Martins	Field Coordinator of Ermera	77299769	Responsible for establishing mechanism Awareness raising at community Coordination with relevant authorities Compliance and monitoring of GRM Implement the recommendations from GRM
6	Domingos Sarmento	Field Coordinator of Lautem	77129382	
7	Jose Pinto	Field Coordinator of Liquica	77968748	
8	Jose Nunes	Field Coordinator of Viqueque	77425090	
9	Mario Benevides	Field Coordinator of Baucau	77538897	
10	Leonel Bere	Field Coordinator of Aileu	77349196	

The sub-project will follow Guidance Note -UNDP Social and Environmental Standards (SES), Stakeholder Engagement Supplemental Guidance: Grievance Redressal Mechanisms for establishing GRM for the sub-project (See Figure 7-2).

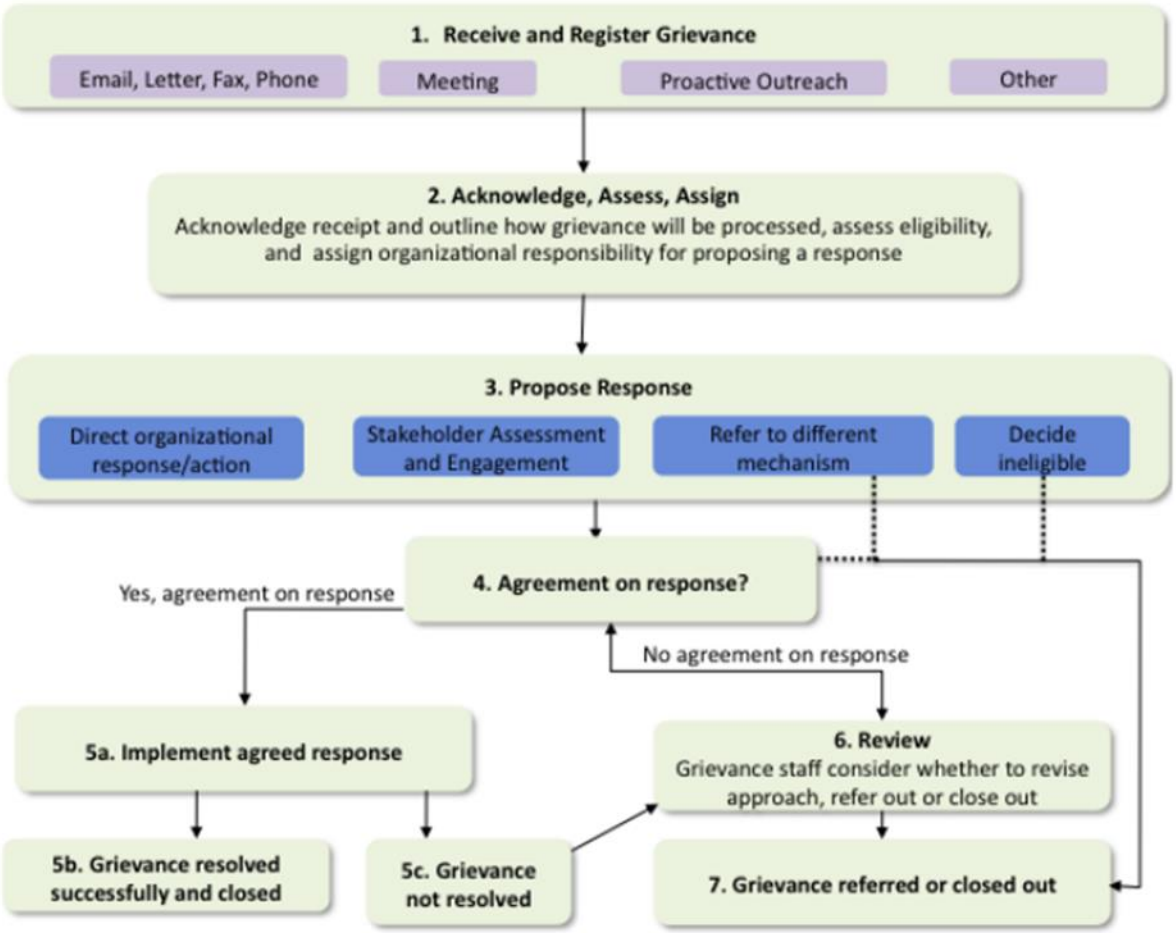


Figure 7-2: UNDP SES GRM process

1. ***Receive and Register Grievance:*** The sub-Project Field Coordinator at Municipality level will receive and register all the grievances within 48 hours. The GRM will be widely publicized through meetings and posters in prominent congregation points such as sub-village office. All the stakeholders will be informed about the purpose, process and assured of the confidentially of personal details of the person recording the grievance. All the stakeholders including government officials, contractor, workers and community will be informed about the focal person and her/his phone number will be shared for either registering the complaints in person or through phone calls.
2. ***Acknowledge, Assess and Assign:*** The nominated Field Coordinator will acknowledge the receipt of the grievance and will share with Monitoring, Evaluation and Communication Officer of the sub-Project who will assess and assign the grievance to the relevant sub-project staff for resolution and preparing the response. Depending on the nature of the grievance, the serious and time sensitive grievances such as sexual harassment, security and misappropriation of the sub-project resources, the Project Manager should be immediately informed and in consultation with UNDP management will resolve and respond to the grievance through appropriate measures.
3. ***Propose Response:*** The assigned person will further investigate in consultation with Field Coordinator and if needed will discuss with other relevant departments and staff to prepare the detailed response.
4. ***Agreement on the response:*** Minor grievances should be handled and responded within one month by the relevant Field Coordinators in consultation with relevant Team Leader/staff and government authorities while response to major grievances should be agreed/resolved by the Project Manager withing 2 months or referred to the Grievance Redressal Committee.

5. ***Implement Agreed Response:*** The relevant Team Lead will implement the agreed response with the support from relevant field and technical staff as required. Relevant government departments will be informed accordingly for their support.
6. ***Grievance Resolved successfully and closed:*** All the grievances received and resolved will be documented and mitigation measures put in place to avoid the repetition of the same or similar issues in future.
7. ***No agreement on the response/Grievance not resolved:*** The assigned staff in consultation with Project Manager will consider revising the approach, refer out or close out as appropriate.
8. ***Reporting to GCF:*** The Project will keep GCF updated on quarterly basis regarding the number of grievances received, natures of the grievances, its status (resolved/not resolved) and mitigation measures put in place to avoid similar situation in future.

7.10.2 External Resolution Mechanism

The Project Grievance Redress Mechanism does not replace or exclude other existing avenues for complaint resolution. All complainants have the right to use the Court of Timor Leste at any time to seek resolution or the following available independent grievance mechanism.

7.10.2.1 UNDP Stakeholder Response Mechanism (SRM)

The Stakeholder Response Mechanism helps project-affected stakeholders, governments and others partners jointly resolve concerns and disputes. It is available when Implementing Partner and UNDP project-level stakeholder engagement processes have not successfully resolved issues of concern. UNDP Country Office management normally leads in Stakeholder Response; a headquarters function will also support the SRM.

The Stakeholder Response Mechanism can help affected people, government agencies, and other project and program stakeholders, start or restart dialogue, facilitate discussions, mediate disputes, enhance understanding of the facts, and undertake other activities that might help resolve concerns and disputes.

The details about UNDP Stakeholder Response Mechanism are available on - www.undp.org/secu-srm. The requests may be submitted via our telephone, post, email or social media applications through details provided on the - www.undp.org/secu-srm.

7.10.2.2 GCF Independent Redress Mechanism IRM)

The IRM's mission is to address complaints from affected people and provide recourse in a way that is fair, effective and transparent, and enhance the performance of GCF's climate funding.

The IRM addresses complaints and grievances from persons adversely impacted by projects or programmes of the GCF. After verifying eligibility, the IRM engages with the relevant parties to explore options for resolving the problems that are raised in the complaint, with an aim to reaching a mutually satisfactory outcome. If parties are unwilling or unable to resolve the issues, the IRM conducts a compliance appraisal to determine whether a compliance investigation is merited, and if so, carries out an investigation to identify any non-compliance with GCF policies or procedures in relation to the complaint and recommends appropriate redress. The IRM monitors any problem-solving agreement or compliance recommendations that results from its processes.

A grievance or complaint can be submitted to the IRM through any means such as submission through an online complaints form, mail, email, voice or video recording, or by calling a toll-free hotline where one has been designated for that purpose by the IRM

More details about IRM can be found on - https://irm.greenclimate.fund"

7.11 Gender and Social Inclusion

Despite the fact that women play a key role in securing, transporting, using, and managing domestic water, as well as in promoting sanitation behaviours at home and in their communities, and the disproportionate number of risks that women face due to lack of adequate access to domestic water supply, women's participation and opportunities to speak during the decision-making process of water supply and sanitation projects are limited. It hinders the reflection of women's needs and opinions. According to the United Nations (UN-Water, 2021), “fewer than 50 countries have laws and policies that specifically mention women's participation for rural sanitation and water resources management”. For example, women need water for domestic use and home vegetable gardens, but men have higher priorities for agricultural water. This provides a lower priority for men for the projects and technologies that reduce women’s burden, including water collection labour and women's needs, such as benefits from safe water and sanitation, are less likely to be met. This situation stems from gender norms and stereotypes that men are key decision-makers in the community.

In rural water supply projects, water management committees operate and maintain the water supply infrastructure and collect fees. Women's participation in the training programs that lead to management role on such committees is often not prioritised and guaranteed. This is due to stereotypes and social norms that assume that “men are good at advanced tasks such as machine operation, while women are responsible for simple manual labour,” as well as patriarchal norms that assume that women require their husbands' permission to participate in anything outside the home. In addition, low literacy rates among women may be a disincentive for them to participate in training because of social norms that dictate that women do not need to read and write. Thus, applying the division of roles between women and men based on traditional social norms to the maintenance of water supply and sanitation facilities as a given, and even distinguishing what knowledge and skills each gender should acquire, may hinder proper maintenance of the facilities. Therefore, women who actually use, manage and maintain the facilities on a daily basis will not acquire the necessary knowledge and skills. In addition, the notion that “men are better at tasks such as operating machinery,” based on the stereotyped gender roles and gender norms in society, is one of the factors that has reduced women's interest in machinery and technology and prevented women from entering the industrial engineering field, which is socially undesirable.

Rural women often have few, if any, income opportunities aside from agriculture, which stresses the importance of ensuring equal access to employment opportunities in rural infrastructure development and particularly road works. Seeing women perform well in non-traditional jobs, such as working in water supply scheme construction and maintenance, also challenges traditional gender roles and is a step towards changing gender norms and advancing gender equality in Timor-Leste.

- While the labour force participation rate more than doubled from 24 percent in 2010 to 46.9% in 2016, crucially over 50% of the working age population are not economically active, with women particularly behind men and youth behind adult over 25 years of age in terms of labour force participation.
- According to the SEIA 2.0 nationwide household survey, ‘the overall labour force participation rate (March 2021) was 51.3 percent. This represents the percentage of the working-age population that is working in the market economy or is looking for paid employment. The labour force participation of women was lower than that of men, respectively 46.7 and 55.8 percent, which represents a gender parity index of 0.84’. Urban areas have larger share of unemployed population compared to rural areas (16.1% versus 7.4%).
- People with disability in Timor-Leste often resort to subsistence work to compensate the lack of access to employment for pay or profit. The participation rate of 28.0 percent for persons with a disability is about half (54 percent) the rate of people without disabilities, which is an indication of the adverse position on the labour market of the former group
- Men predominate in every sector except self-employed non-farmers, of which 57% are women. Seventy-six percent (76%) of businesses and farms are owned by men; men

occupy roughly 59-69% of the jobs in government, NGOs, international organizations, and state-owned enterprises.

- Most of the population have no consistent incomes due to working in the informal sector, and many are subsistence farmers. In 2016, of the employed population in Timor-Leste, 42.9% were self-employed and 15.1% were contributing family members. Of those, only a quarter of employed women (28%) were in waged or salaried (employee) positions, whereas half (49%) of all employed men were in secure jobs.

Given the socio-economic profile of rural communities and the gender norms that persist in Timor Leste, it is imperative to ensure appropriate mainstreaming of gender in the design, implementation and operation of the water supply schemes.

The opportunity to participate in water supply scheme rehabilitation construction and maintenance works will open new employment and income generating opportunities for women, as well as increase their agency. It is expected that during the implementation stage itself, there will be available job opportunities for local youths, women and the local community to participate in the construction works. While this will provide income generating opportunities, it will also help to develop the community and household skills set for the future. The sub-project will target greater participation and involvement of women (targeting at least 30%), vulnerable groups and disability groups. Collaboration and cooperation with local authorities and leaders will ensure broader gender involvement and empowerment.

The sub-project will further refine/adjust the developed Gender Action Plan (Annex 4) based on additional contextual data collection, consultation and feedback received from relevant stakeholders. The Gender Action Plan will be implemented and monitored and the lesson learned will be documented. Consideration would be given to ensure that the needs of women, disabled people, youth, and other vulnerable groups are considered at all stages from planning, design, execution and monitoring of the road infrastructure. Dedicated and simplified tools will be designed and used as part of the Gender Action Plan. Additional measures include ensuring adequate representation and engagement of vulnerable groups in the consultation activities and full compliance with the GRM process.

7.12 Indigenous People's Plan (IPP)

As social groups with identities that are often distinct from dominant groups in their national societies, Indigenous Peoples are frequently among the most marginalized and vulnerable segments of the population. As a result, their economic, social, and legal status often limit their capacity to defend their rights to lands, territories, and other productive resources, and restricts their ability to participate in and benefit from development. At the same time, GCF recognizes that Indigenous Peoples play a vital role in sustainable development and emphasize that any constructions should benefit Indigenous Peoples, thereby ensuring long-term sustainable management of critical environmental and socio cultures of the community.

The sub-project has been designed with the assistance of stakeholders and aims to provide benefits to the broader community. Notwithstanding, as with any sub-project that involves construction, some dissatisfaction can occur and conflicts may arise. It is important that potential areas of tension are recognised early and appropriate actions taken to avoid or minimise conflict.

The Indigenous People's Plan (IPP) was developed (see Annex 5) and the checklist was applied for appraising whether FPIC process was required. The IPP is crucial to recognize the distinct circumstances that expose Indigenous Peoples to different types of risks and impacts from development projects. The purpose of developing this Indigenous People Plan is to avoid adverse impacts on Indigenous Peoples and to provide them with culturally appropriate social and economic benefits. In particular,

a. to respect Indigenous Peoples' rights, including their rights to Free, Prior, and Informed Consent (FPIC).
b. to involve Indigenous Peoples in the design of the sub-project, receive culturally appropriate benefits that are negotiated and agreed upon with the affected persons and/or communities.

c. to avoid or adequately address to potential adverse impacts through a participatory and consultative approach; and

d. to monitor the implementation of the sub-project, any required Indigenous Peoples plan or framework, and project benefits are monitored.

Once implemented the IPP will ensure that:

- The community has been consulted and project elements have been designed with their informed consultation and participation throughout the sub-project;
- public disclosure conforms with GCF requirements;
- all stakeholders are appropriately represented;
- avoid adverse impacts to local community during construction and operations and where not possible, minimise, restore or compensate for these impacts;
- cultural heritage is not adversely impacted;
- community health and safety is protected and overall well-being benefits derived from the sub-project;
- complaint and grievance mechanisms are put in place and proactively managed; and
- long-term social benefits are achieved.

Local stakeholders and community members have a key role to play in the implementation and monitoring of the sub-project. Consultation with stakeholders will continue. This will help ensure that stakeholders continue to be aware of the sub-project, its progress and any changes in the sub-project. It will also assist in identifying any issues as they arise.

MSA will be responsible for advisory support and extensions services to local beneficiaries backstopping in the implementation of programme activities. Records of all consultations are to be kept and reported a weekly basis. The MSA must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

7.13 Training and Capacity Building

Training and capacity development is a key aspect to support the ESIA and ESMP processes. ANLA is the national agency that is responsible for facilitating the screening and for issuance of the requisite permit and licensing in accordance with the ELL and will facilitate the trainings with the PMU. The training targets staff from the PMU, technical counterparts in the respective government ministries and other responsible parties to have clear information and understanding of the safeguard policies and its requirements and to support the implementation and monitoring of the ESMP.

The training also focuses on the procedure for complying with the social and environmental safeguard requirements and procedures, and applicable regulations in relation to the environmental procedures and issuance of the appropriate environmental license prior to commencing physical works on the site.

GCF SRC project facilitated training workshop for Municipal Engineers and Technicians on introduction to the national ELL and ESIA/ESMP concepts for better understanding during monitoring, reporting and compliance.

Table 7-5: ESIA Training Plan

Description of Training	Target Participants	Facilitated by
Training on ESIA/ESMP (including monitoring) and Climate Resilient Infrastructure Methods (CRIM)	• National Technical Staff from MSA, SSE, ADN • Municipal Engineers and Technicians	ANLA, UNDP, PMU

Training include the Climate Resilient Infrastructure Methods (CRIM) was conducted at both the national (Dili) and in the Municipal levels between November 25 and December 10, 2021. The training which is part of Outcome 2 of the GCF SRC project targets technical staff in the respective line ministries (SSE, MSA, MAF, MoPW) at the national level and municipal engineers and Environment Officers. Further sessions have been planned and will be facilitated to enhance the capacity of technical staffs in the respective line ministries to support the implementation and monitoring of the site specific ESMP.

The sub-project will support the selected contractor and relevant technical staff to receive refresher training to ensure compliance with the environmental and social safeguards measures including dealing with stakeholders, community participation and relations; adherence to labor laws and standards; gender equality; child protection; training on OHS and emergency requirements, PPEs, disability inclusion and workers and public safety. Along with the monitoring that will be undertaken, coaching and mentoring will also be offered to the contractor's staff to ensure full compliance with the safeguard measures.

7.14 Estimated cost of Environmental Mitigation Measures

The estimated cost for implementing the mitigation measures and monitoring plan is provided in the table below.

Table 7-6: Expenditures of reducing environmental impacts and monitoring

#	Item	Unit	Quantity	Unit Cost in USD	Total in USD
Impact reducing measures described in the document [15]					
1	Climate proofing measures (Bio-engineering)	lump sum		5,000	5,000
2	Technical safety measures for the construction sites	lump sum	1	1,500	1,500
3	Implementation of Grievance mechanism	lump sum	1	2,000	2,000
4	Occasional archaeological discoveries, training the labor in the issues connected with the corresponding activities.	lump sum	1	1,500	1,500
5	Identification of places for disposal of the waste. Implementation of procedures for treating the waste	lump sum	1	1,000	1,000
6	waste collection generated during construction	lump sum	1	500	500
Monitoring described in the environmental monitoring plan					
7	Protection of the safety and health of the labor / periodical checking of the training	hours	15	100	1,500
8	Monitoring of the surface water protection measure in the course of the construction works	month	4	250	1,000

[15] Estimated expenditure of the construction period

9	Monitoring of the ground water protection measure in the course of the construction works	month	4	250	1,000
10	Ambient water and noise, regular checking of the vehicles and building machinery	month	4	250	1000
Emergency Response Training and Engagement of Environmental Supervision Consultant					
11	Training of construction workers in emergency response	lump sum	1	1,000	1,000
12	Field Environmental Supervision Consultant	month	3	1,000	3,000
				TOTAL	**20,000**

7.15 Contractor's Environmental and Social Management Plans

The effective implementation of the environmental management system is based on the development and implementation of environmental and social management plans by the Contractor.

A summary of the environmental and social management plans to be made available by the Contractor is presented in the table below. The plans are described in terms of their purpose and objectives, anticipated date for completion, and the responsible party (contractor) for development and implementation of the plan.

Table 7-7: List of Contractor's environmental management plans

#	Plan	Purpose and objectives of the plan	Date of performance	Responsibility for working out and implementing the plan
1	Traffic management plan	Sets out specific actions for construction contractor to properly manage traffic and its potential impacts, including safety and accidents.	Before commencement of the rehabilitation works, the Contractor shall work out and prove the final detailed version of the traffic safety plan.	The Constructor is responsible for the fulfillment of the requirements that shall be met according to the approved final detail plan for the rehabilitation works. The follow-up action shall be carried out by MSA.
2	Erosion, Drainage and Sediment Control Management Plan (EDSCP)	The plan foresees measures that shall be implemented by the Contractor in order to recover the territories damaged during the construction stage.	Before commencement of the works, the Constructors shall work out and prove a final detailed EDSCP plan	According to the requirements of the plan approved before launching the construction works, the Constructor shall be responsible for the erosion, drainage and sediment control. The follow-up action shall be carried out by MSA.
3	Environmental pollution prevention and waste management plans	Elaboration of plans by Contractor and MSA, to reduce or eliminate environmental pollution	Contractor, together with sub contractors shall implement all requirements of environmental pollution prevention and debris management plans before commencing works. All construction aspects shall be envisaged during preparation of plans.	Contractor is responsible to resolve all issues raised, according to environmental pollution prevention and debris management plans. The MSA shall periodically revise implementation of plans.

7.15.1.1 Outline of Traffic Management Plan

The traffic management plan is required in order minimize risks to public and worker health and safety and risk to the natural environment due to increased traffic on rural roads, traffic diversions and potential reduced access during construction.

Objectives of the plan
The objective of the Traffic Management plan is to control site traffic to minimize the negative social, environmental and health and safety impacts of the sub-project.

The purpose of the TMP is to provide a framework for managing the movement of traffic to and from the sub-project Site, and to minimize the impact on the local road network during the construction and decommissioning period of the sub-project.

The plan will address the following:

- Traffic route identification and assessment
- Swept path analysis (if necessary)
- Existing local traffic procedures;
- Construction traffic management procedure
    - Description of number and type of vehicles to be used (HGVs, LGVs etc.) – including use of special exhaust control, high quality servicing for vehicles, standards compliance etc.
    - Restrictions for passing through territories other than the working ones determined in the sub-project;
    - Strict observance of the speed limits determined in the sub-project, applied particularly strictly when passing populated areas (20 km/h speed limit along the settlements);
    - Short-term training on environmental protection and safety issues to be held for drivers;
    - Modalities of announcements in media to inform public on increased traffic occurrences;
    - Travel management planning.
- Programme
    - The traffic/transportation schedule for the works
    - HGV delivery schedule
- Construction parking
- Turning facilities
- Site Security
- Provision of Public rights of way
- Mitigation

Responsibility
Prior to commencing the works, the Contractor shall develop the traffic management plan covering the construction phase and decommissioning phase of the sub-project. The Contractor shall be supervised and controlled by the MSA.

Monitoring and review
The Constructor shall prepare weekly reports presenting the monitoring of compliance with the traffic management plan. A manager of the MSA shall periodically check Contractor's activities connected with the fulfillment of the traffic management plans.

7.15.1.2 Outline of Drainage and Sediment Control Management Plan (EDSCP) and Contaminated Soil Disposal Management Plan (CSDMP)

The Contractor shall develop the methodology, procedures and action plan for protecting from, and recovering the territories affected by erosion and sedimentation impacts caused by the works, to good ecological conditions.

Objectives of the plan
The EDSCP and CSDMP plan shall determine the measures to be fulfilled as well as responsibilities to make it possible for the Contractor to make a schedule that is necessary for achieving the objectives of the plan.

The plan should include the following:

Sub-Project description

- Provide a comprehensive description of the sub-project; and
- Include an overview of the pre-construction, construction, and operational phases of the sub-project.

Purpose, scope and objective
The section should include:

- Scope of the Erosion, Drainage and Sediment Control Management Plan (EDSCP) and Contaminated Soil Disposal Management Plan (CSDMP) ;
- Establish objectives for general EDSCP and CSDMP;
- Establish specific objectives for site specific EDSCP and CSDMP;
- Relationship to specific mitigation measures.

Statutory and regulatory requirements
- Legislative requirements as prescribed in the Environmental and Social Management Plan (ESMP).

Potential impacts

- Overview of impacts identified in the ESMP.

Erosion and sediment control impacts and mitigations
Tabulate the following information:

- Source of Impact
- Potential Impact and Relevant Management Plan Objective
- Mitigation and Management (Design Feature/ Specific Measure)
- Mitigation Measure
- Activity/ Monitoring
- Frequency
- Duration
- Responsibility
- Evidence.

Implementation (human resources, partners, and organisational responsibilities)

- Describe human resources for implementation of the plan and component programs/interventions;
- Clearly define roles and responsibilities and organisational structure;
- Discuss training that will be provided; and

- Describe potential partners (NGOs, government, etc.) and their respective roles and responsibilities.

Resources

- Equipment requirements including erosion and sediment control devices (sediment fencing, silt curtains, etc.) water quality monitoring equipment; and on-site weather monitoring station;
- Staff involved including Construction Environmental Officer; Environmental Coordinator; Monitoring Officer; Environmental and Regulatory Manager; and
- Registers including water quality monitoring record; and non-conformance register.

Schedule

- Schedule of implementation for the component programs/ interventions and the overall plan.

Monitoring and evaluation

- Overall monitoring and evaluation framework that integrates the monitoring and evaluation requirements for the component programs/ interventions.

Reporting and notification

- Contractor's monthly report including results of the surveys and inspections; and number and results of verification inspections, including but not limited to landform stability inspections, sediment control structure and stockpile inspections and control measures implemented to manage failing sediment control structures and stockpiles.

Budget

- Budgets for the component programs/ interventions and the total cost of the plan.

Responsibility

The Contractor shall develop a detailed reinstatement plan, including the following topics:

- Establish specific objectives for site specific EDSCP and CSDMP;
- Plan for inspecting the works carried out;

A representative of the MSA shall periodically check the quality and compliance of the works carried out by the Contractor with the reinstatement plan.

Monitoring and review

Prior construction works, the Contractor shall prepare a descriptive report upon the background data characteristic of the land determined for the activities. The report shall be agreed with a representative of the MSA and UNDP environmental safeguards specialist.

7.15.1.3 Outline of Pollution Prevention and Waste Management Plan

The construction contractor will be required to develop a construction specific waste management plan prior to the start of the construction work with consideration of requirements specified in this chapter.

Objectives of the plan

The objectives of the pollution prevention and waste control management plan are:

- To identify potential pollutants
- To provide procedures for transporting, handling, storing, using and disposing of pollutants
- To describe the proposed measures to prevent spillages and pollution to land and water
- To protect water resources
- To harmonize the issues governing the generation, handling, treatment and disposal of wastes generated during the construction phase as well the decommissioning and operation phases with regard to the various regulations and rules currently active in Timor Leste;
- To identify any third-party agreements for waste transfer or handling;
- To obtain and use different methods to reduce the volume of the waste to its minimum;

- To establish temporary secure storage of waste generated during construction phase in defined areas away from watercourses, drains and aquifers;
- To provide monitoring and auditing procedures over implementation of waste management requirements.

Responsibility

The Contractor is mainly responsible for the procedures connected with the disposal of the waste.
In this regard, the Contractor shall ensure:

- Waste disposal contractors use facilities for treatment and disposal of waste that meet acceptable standards
- Specialists involved in waste management have adequate training and follow stipulated waste management procedures for minimizing, handling and storing waste
- Audits are carried out to ensure these are achieved

Monitoring and review

Monitoring of the waste plan shall be carried out before launching the construction works, after their fulfillment and periodically.

Annexes

Annex 1 – Sub-Project description – List and description of Water Supply Scheme sub-projects

Table 0-1: : Details of water supply scheme rehabilitation/construction sub-projects implemented by the project. Schemes highlighted in blue are being implemented by GCF while the remaining 18 are being implemented by GoTL

Code	Project Name	Municipality	From	To	Distance (km)	Beneficiaries		Etimate Cost	Scope of Work
						Popn	Household		
A-WS-01	Construction of gravity-fed water supply system in suku Liurai of Remexio	Aileu	SUCU LIURAI	SUCU LIURAI	4.50	1,202	201	$ 100,000.00	Installation of 80 m3 of reservoir, installation if 4.5 km of transmission and distribution pipelines and construction of 20 public taps, life stick fence
A-WS-02	Construction and installation of 2 km gravity-fed water supply system from Tataloko - Erluli in Fahisoi Lequidoe	Aileu	FAHISOI	ERLULI	2.00	854	128	$ 75,000.00	Installation of 60 m3 of reservoir, installation if 2 km of transmission and distribution pipelines and construction of 11 public taps, Life stick fence
A-WS-03	Construction and installation of 3.5 km of water supply system in suku Lahae	Aileu	LAHAE	LAHAE	3.50	201	32	$ 90,000.00	Installation of 60 m3 of reservoir, installation if 3.5 km of transmission and distribution pipelines and construction of 8 public taps
B-WS-01	Water supply system from Irabere to community in Suco namanei	Baucau	Namanei	Uasufa+Daicou	1.55	293	59	$ 65,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation if 1.55 km of transmission and distribution pipelines and construction of 17 public taps
B-WS-02	Water Supply system to suco Laisorulai	Baucau	Laisorulai kraik	Kailoibere	5.37	487	132	$ 150,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation of 5.37 km of transmission and distribution pipelines and construction of 16 public taps
B-WS-03	Water Supplysystem to aldeia uaimanaboe and uatobala, suco uailili	Baucau	uailili	uailili	2.40	1,007	196	$ 75,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation of 2.40 km of transmission and distribution pipelines and construction of 18 public taps
B-WS-04	Water Supply system to aldeia uailacama, suco vemase tasi	Baucau	vemasse tasi	vemasse tasi	2.69	1,356	243	$ 75,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation of 2.69 km of transmission and distribution pipelines and construction of 18 public taps
B-WS-05	Water supply system to daruisi, suco guruca	Baucau	guruca	Gurusa	5.37	363	75	$ 150,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation of 5.37 km of transmission and distribution pipelines and construction of 10 public taps
B-WS-06	Water supply system to aldeia ailita	Baucau	afaloicai	ailita	0.96	288	57	$ 50,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation of 0.96 km of transmission and distribution pipelines and construction of 10 public taps
B-WS-07	Water Supply system to wawakasa and suco larisula	Baucau	larisula	larisula	5.91	337	73	$ 175,000.00	Capturing tank and Installation of 60 m3 of reservoir, installation of 0.96 km of transmission and distribution pipelines and construction of 12 public taps
B-WS-08	Rehabilitation of water supply system in suco vemase tasi	Baucau	vemasse tasi	vemasse tasi	1.25	67	21	$ 50,000.00	Reservoir of 60 m3 and rehabilitation of 1.25 km of transmission and distribution pipelines and rehabilitation existing taps
B-WS-09	Rehabilitation of water source and canalize to community in suco afaca	Baucau	afaca	afaca	2.57	416	76	$ 85,000.00	Reservoir tank of 60 m3, rehabilitation of 2.57 km of transmission and distribution pipelines and rehabilitation existing taps
E-WS-01	Construction of water supply system in suku Estado	Ermera	Estadu	Estado	2.00	773	137	$ 85,000.00	Installation of 80 m3 of reservoir, installation if 2 km of transmission and distribution pipelines and construction of 21 public taps, life stick fence
E-WS-02	Construction of water supply system 4 km of aldeia Ilat, suku Baboe Leten	Ermera	Baboe Leten	Ilat	4.00	461	80	$ 135,000.00	Installation of 60 m3 of reservoir, installation if 4 km of transmission and distribution pipelines and construction of 8 public taps, Life stick fence
E-WS-03	Construction of water supply system in Baboe craik	Ermera	Baboe Kraik	Kolimali+Kailulik	5.00	539	97	$ 175,000.00	Installation of 60 m3 of reservoir, installation if 5 km of transmission and distribution pipelines and construction of 17 public taps
E-WS-04	Construction of water supply system in Lauana	Ermera	Lauana	Launa	3.00	704	123	$ 95,000.00	Installation of 80 m3 of reservoir, installation if 3 km of transmission and distribution pipelines and construction of 20 public taps
E-WS-05	Construction of water supply system in Letefoho Vila	Ermera	Aimeta	Haupu	9.00	1,154	219	$ 200,000.00	Installation of 80 m3 of reservoir, installation if 9 km of transmission and distribution pipelines and construction of 22 public taps
E-WS-06	Construction of water supply system in Hatuletan	Ermera	Hatuleta	Leguimea	3.00	724	127	$ 85,000.00	Installation of 60 m3 of reservoir, installation if 3 km of transmission and distribution pipelines and construction of 19 public taps
La-WS-01	Construction of water supply system in mafuro	Lautem	Luro	Multi suco	10.00	586	105	$ 150,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation if 10 km of transmission and distribution pipelines and construction of 18 public taps
La-WS-02	Construction of water supply system in Dilno	Lautem	Iliomar I	Iliomar I	4.75	368	78	$ 85,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation if 4.75 km of transmission and distribution pipelines and construction of 14 public taps
La-WS-03	Construction of water supply System in Suco Bauro	Lautem	Bauro	Bauro LPS	2.13	610	120	$ 65,000.00	Construction of intake structure, installation of 60 m3 of reservoir, installation if 4.75 km of transmission and distribution pipelines and construction of 16 public taps
La-WS-04	Rehabilitation of water supply (water pump) system in suco souro	Lautem	Souro	Lospalos	2.00	500	115	$ 60,000.00	Water pump and installation of 60 m3 of reservoir, installation if 2 km of transmission and distribution pipelines and construction of 12 public taps
La-WS-05	Extension of water supply system (water pump installation) suco Maina 1	Lautem	Suco Maina I	Maina I	2.00	361	62	$ 60,000.00	Water pump installation, 60 m3 of reservoir, installation of 2 km of transmission and distribution pipelines and construction of 12 public taps
La-WS-06	Construction of water supply sysyem (drilling) in Suco Daudere	Lautem	Suco Daudere	Daudere LTM	2.00	452	88	$ 60,000.00	Drilling of well and installation of 60 m3 of reservoir, installation if 2 km of transmission and distribution pipelines and construction of 12 public taps
La-WS-07	Water supplay system in suco muapitine	Lautem	Malahara Muapitene	Malahara	1.66	508	101	$ 65,000.00	Intake structure, 60 m3 of reservoir, installation of 1.6km of transmission and distribution pipelines and construction of 16 public taps
La-WS-08	Construction of water supply system (drilling) in Convention Centre Lautem	Lautem	Fuiloro	Lospalos	0.80	368	78	$ 35,000.00	Drilling of well, installation of 60 m3 of reservoir, installation of 0.8 km of transmission and distribution pipelines and construction of 5 single taps
La-WS-09	Extension of water supply system (Water Pump installation) in Caiwaca	Lautem	Caiwaca	Caiwaca	1.10	67	21	$ 50,000.00	Install water pump and 60 m3 of reservoir, installation of 1.10 km of transmission and distribution pipelines and construction of 7 public taps
La-WS-10	Construction of water supply system (drilling) in Suco Omucano	Lautem	Souro	Souro	3.00	500	115	$ 75,000.00	Drilling of well and installation of 60 m3 of reservoir, installation of 3 km of transmission and distribution pipelines and construction of 10 public taps
La-WS-11	Construction of Water Supply System in Serelau, Lautem	Lautem	Serelau-Lautem	Serelau	0.64	366	65	$ 40,000.00	Intake structure and installation of 60 m3 of reservoir, installation of 0.64 km of transmission and distribution pipelines and construction of 12 public taps
L-WS-01	Construction of gravity-fed water supply system in Fatumasi	Liquica	Fatumasi Suku Fatumasi	Durbasa Suku Fatumasi	4.00	407	72	$ 95,000.00	Installation of 60 m3 of reservoir, installation if 4 km of transmission and distribution pipelines and construction of 18 public taps
L-WS-02	Construction of gravity-fed water supply system in Lauhata	Liquica	Pisu Leten Suku Lauhata	Pisu Karaik Suku Lauhata	7.00	820	125	$ 150,000.00	Installation of 80 m3 of reservoir, installation if 7 km of transmission and distribution pipelines and construction of 22 public taps

L-WS-03	Construction of gravity-fed water supply system in Guico	Liquica	Pandevou Suku Guico	Mauono Suku Guico	4.00	593	97	$ 95,000.00	Installation of 80 m3 of reservoir, installation if 4 km of transmission and distribution pipelines and construction of 20 public taps
V-WS-01	Extension of water supply system (water pump installation) in irabere	Viqueque	Irabere	Irabin de cima	0.81	205	42	$ 123,300.00	Water pump installation, 60 m3 of reservoir, installation of 0.81 km of transmission and distribution pipelines and construction of 8 public taps
V-WS-02	Construction of water supply system in bahaneo liaruka	Viqueque	Bahaneo-Liaruka	Ba Aldei no Suco	5.00	242	59	$ 150,000.00	Construction of ntake structure, installation of 60 m3 of reservoir and 5 km of transmission and distribution pipelines and construction of 12 public taps
V-WS-03	Construction of water supply system (drilling) in Suco uma uain leten	Viqueque	Uma uain leten	Multi aldeia	3.00	457	105	$ 40,000.00	Drilling of well and Installation of 60 m3 of reservoir, installation of 3 km of transmission and distribution pipelines and construction of 13 public taps
V-WS-04	Construction of water supply system in luhan raikuak	Viqueque	Luhan raikuak	Laline	2.00	307	65	$ 142,624.82	Construction of intake structure, 60 m3 of reservoir, and installation if 2 km of transmission and distribution pipelines and construction of 8 public taps
V-WS-05	Construction of water supply system (drilling) in Suco Raitahu	Viqueque	Raitahu	Uma Uain kraik	2.53	1,221	218	$ 150,000.00	Drilling of well, installation of 60 m3 of reservoir and 4.45 km of transmission and distribution pipelines and construction of 13 public taps
V-WS-06	Construction of water supply sytem in ossu decima	Viqueque	Ossu Decima	Ossu Decima Multi Aldeia	5.00	1,330	277	$ 150,000.00	Water intake structure, 60 m3 of reservoir installation and 4.2 km of transmission and distribution pipelines and construction of 8 public taps

Annex 2 - Stakeholder engagement plan

A2.1 Introduction

Stakeholder engagement and consultation is necessary to consider stakeholders inputs and views on the project and ensure that appropriate representation is given to all. To this end, this SEP, the ESMP, GAP, IPP work together to help the project meet its objectives.

The proposed sub-project entails the rehabilitation of existing water supply schemes and construction of new schemes, and consists of the climate resilience application and methods to help safeguard the infrastructure from climate induced disasters while at the same time enhancing the community's access and livelihood opportunities.

A2.2 Stakeholders and Roles in Project

Stakeholder engagement will be facilitated by various means and include the project board meetings, technical sub-steering committee meetings, stakeholders' workshops, formal and informal meetings, trainings/Training of Trainers, stakeholder's consultation, information campaigns, GRM consultation, FPIC, joint monitoring, media and networking events (e.g., community forums), internet and social media (such as Twitter, Facebook) communications.

The project board will serve as a major institutional mechanism for key stakeholder engagement. It is composed of high to mid-level representatives of the SSE, all responsible parties (MSA, MAF, SSCP, MoPW) and also, MoF, MOFA, UNDP. The Municipality Administrator attends the Technical Sub-Steering Committee (TSSC) Meetings, and this is another important forum for key stakeholder engagement in which members provide inputs to and endorsement of the design and quality of the project outputs. The TSSC members will represent the government, private sector, academia, indigenous peoples and civil society to provide guidance and technical advice on the project.

Local stakeholders and community members have a key role in implementing and monitoring the project. The host communities benefitting from the project have been selected based on climate risk profiles, socio-economics vulnerabilities and coping capacity of communities. Community members from selected communities will be mobilized to form consultative community groups and will be engaged in participatory planning, implementation and maintenance of community climate resilient infrastructure. Representatives of relevant indigenous peoples and/or ethnic minorities will be included in the community groups.

Under the public awareness and education component, it is planned to target both members of the general public and specific groups of society, including selected communities, youth women, local governments, NGOs, media, education institutions.

During the pre-construction phase, there will be extensive consultation with national and local authorities, residents of the host community, indigenous peoples, CBOs/NGOs representative and local government, to facilitate understanding of the roles, functions, and responsibilities within the project implementation. The Gender Action Plan, Indigenous Peoples Plan, has also been prepared. Grievance Redress Mechanism has also been established as a means to receive complaints and conflict resolution mechanisms.

Local community consultation councils will be established at target municipality and/or community levels to maintain dialogue with the local beneficiaries and stakeholders throughout the sub-project implementation. Stakeholders will also be engaged throughout the implementation of the project including during the monthly construction site meetings, joint monitoring visit and progress review of the project and enable adaptive project and construction management in response to the needs and concerns of the communities.

A2.3 Stakeholders Engagement Strategy

Stakeholder, Groups Organization or Sector	Potential Role in the sub-project	Level of interest/power	Engagement strategy
UNDP	PMU, AE	Interest: High Power: High	LoA with MSA, Co-Chairs the Project Board and TSSC Meetings, Joint Monitoring Visits, regular Monitoring, PMU provides overall oversight for the project
Municipality Administrator, Director of PDIM, PA, CDO	PDIM Process, GRM, Contracting Authority	Interest: High Power: High	Co-Chairs the Project Board and TSSC Meetings, Joint Monitoring Visits Consultations throughout the project life cycle Establish Contract with the local Contractor discuss the GRM process, participates in decision making committees
Secretary of State for Environment	Project Board, IP	Interest: High Power: High	Project Board, Technical Sub-Steering Committee Meetings, Joint Monitoring Visits
ANLA	Environmental Screening, Issuance of the Licence	Interest: High Power: High	ESIAs/ESMPs, Environmental License
Ministry of State Administration	Responsible Party, Project Proponent, oversight of PDIM, LoA with AE/UNDP Contracting Authority	Interest: High Power: High	Establish LoA between UNDP & MSA, Engage Technical Staff in designs and implementation of the project Operation and Maintenance of the project
Municipality MoPW, DRBFC	Responsible for rural water supply system rehabilitation, bridges and flood control	Interest: High Power: High	Design standards, Technical Staff in designs and implementation of the project Operation and Maintenance of the project
MAF	Responsible party for the complementary catchment management measures, agroforestry intervention	Interest: High Power: Low	Technical Staff and extensionists involve in the implementation of the agroforestry component of the project Operation and Maintenance of the agroforestry and catchment management interventions, public meetings/consultations
Chief of Villages and sub-villages	Community Leader/Local Authority in the sub-project location	Interest: High Power: Low	Briefing the stakeholders in Municipality level relating to the project and explain their important role in these activities discuss the GRM process, include representatives in decision making committees, public meetings/consultations, Construction site meetings
Lia Nain (cultural leaders)	Traditional cultural leaders to consult on cultural issues in the sub-project location	Interest: Medium Power: Medium	Involvement in the stakeholder's consultation during technical assessment and screening, public

			meetings/consultations, involvement in the traditional cultural ceremonies
Host Community	Beneficiary of the project	Interest: High Power: Low	Briefing the stakeholders in community level relating to the project and explain their important role in these activities Involvement in the stakeholder's consultation during technical assessment and screening, public meetings/consultations
Indigenous Peoples	Beneficiary of the project	Interest: High Power: Low	Briefing the stakeholders in Municipality level relating to the project and explain their important role in these activities, public meetings/consultations Obtain FPIC, discuss the GRM process, include representatives in decision making committees
Local Contractor	Implementation of the	Interest: High Power: Low	Contract to implement the construction works, Construction site meetings, public meetings/consultations

A2.4 Stakeholder identification and consultation methods

Engagement Technique	Application of the technique
Correspondences (Telephone, Emails)	Share/distribute information to Government officials, Local Government, and organisations/agencies Invite stakeholders to meetings and follow-ups
One-on-one meetings	Seeking views and opinions Enable stakeholder to speak freely about sensitive issues Build personal relationships Record/take notes of the meetings and follow-up actions
Formal meetings	Present the project and the respective sub-project information to group of relevant stakeholders Allow group to comment and provide their feedback, opinions and views Build impersonal relation with high level stakeholders Disseminate technical information Record discussions, take notes of the meetings and follow-up actions
Public meetings/consultations	Present project information to a large group of stakeholders, especially the beneficiaries and members of the host communities Allow the group to provide their views and opinions Build relationship with the communities, especially those impacted Distribute non-technical information Facilitate meetings with presentations, PowerPoint, posters etc. Record discussions, comments, questions and note what follow-up actions are needed
Focus group meetings	Present Project information to a group of stakeholders Allow stakeholders to provide their views on targeted baseline information

	Build relationships with communities Record responses
Construction site meetings	Present update on the progress of the construction works and next month plans. Discuss key issues arising and finding appropriate solutions
Project/UNDP website	Present project information and progress updates Disclose ESIA, ESMP and other relevant project documentation
Direct communication with affected crops/asset owners (IS component only)	Share information on timing of works including any traffic disruptions Agree options for removing encumbrances, community objects and/or crops in the ROW.
Road signs and notices	Share information on project activities Reminders of potential impacts (eg for increased movement of site traffic; remind farmers and community land owners about the schedule of the works, ensure that where the project is likely to affect community that they are to harvest crops and also take actions to avoid the impact that construction activities will have
Project brochures/leaflet/newsletters	Brief project information to provide regular update stakeholders, newsletters and leaflets Site specific project information.
Notice boards	Post relevant project information such as during the construction phase to provide update Site specific project information and plans to be posted as required

A2.5 Stakeholders Engagement Plan (SEP) Matrix

Output	Activity	Responsibility	Stakeholders	Frequency (Estimated time)	Nature of Activity
Project Board Meetings	Annual Work Plan, budget approval for the sub-project	PMU, SSE, RPs, UNDP	Project Board Members including SSE, all responsible parties (MSA, MAF, SSCP, MoPW) and also, MoF, MOFA, UNDP.	At least 1 annually and/or as required	High-Level Meetings
Technical Sub-Steering Committee Meetings	Sub-project prioritization and discussion on technical aspects. Discussion on the establishment of the LoA with MSA to facilitate the implementation of the sub-project	PMU, SSE, RPs, UNDP	TSSC Members including SSE, all responsible parties (MSA, MAF, SSCP, MoPW) and also, MoF, MOFA, UNDP, SEII.	Quarterly and/or as required	Technical Level Meetings with key stakeholders in the respective line Ministries
Preparation Phase /field assessment	Public consultation at national, Municipality, Administrative Post and community in the construction area. this is including discussion of land declaration from respective community	PMU, engineer, Field Coordinators	PDIM national, Municipality Administrator, Municipality Director of Public Works, Technical staff at municipality, Administrator of Administrative Post, Chief of Village, community members	During assessment and preparation of document (engagement will be continued until implementation and hand-over of the project)	Meetings, workshops, and on-site field visit
	Public consultation of conducting field assessment and conducting the Environmental and Social Impact Assessment (ESIA), Introduction of UNDP SESP and establishment of the Grievance Redness Mechanism (GRM)	PMU, Engineers, CTA, SES Consultant, Field Coordinators, ANLA, SSE	The National Authority of Environmental License (ANLA), Municipality Focal Point of Environment, Local authorities from Municipality to village level	During assessment and preparation of document, the GRM committee will be established to support and facilitate to concern may arise during implementation.	Meeting, field assessment

Output	Activity	Responsibility	Stakeholders	Frequency (Estimated time)	Nature of Activity
	Technical assessment, Engineering Designs, BOQ and ITB document preparation	Engineers, CTA	Municipality technical staff, Administrator of PA and Municipality	During preparation of design, BoQ and technical specifications	Meeting, field/site visit
	Training /capacity building to national, municipal engineers, environment staff	PMU	National, municipality, Administrative Post, Village	During preparation. the training will be followed during construction (coaching period to technical staff and contactors technical staff, supervisor)	Training, site visit
Procurement phase	Announcement for tender process, field visit	MSA, Municipality Procurement Committee, PMU	Local pre-qualified contractors, engineers	Announcement of tender process and announcement of the result based on PDIM Procurement manual and procedures	Meeting, site visit
	Evaluation of bids and announcement	MSA, Municipality Procurement Committee, PMU	Selected contractor, Evaluation Committee, Head of Municipality	Evaluation committee, announcement of contract award	Meetings, Notice Boards
Construction phase	Launching and joint monitoring in the field	PMU, contractor	National, Municipality and local/village authorities	During launching to start its construction and preliminary joint monitoring	On site
	Construction Site Meetings	Contractor and engineers, CC&EO, FCs, CTA	Local authority including those that engaged on the construction work, local authorities and village leaders	Project site – monthly	Meeting and discussion at site

Output	Activity	Responsibility	Stakeholders	Frequency (Estimated time)	Nature of Activity
	Introduction of GRM structure and sensitize GRM function	Field Coordinator, engineer, Contractor	Municipal, APs and Council of Suco' representatives	During the implementation (quarterly)	Meeting and discussion at site
	Review on implementation of Environmental plan and recommendation	contractor	Village head, community members, Environment focal point, Field Coordinator, engineer	Monthly	Meeting, site visit
	Review GRM and update information of GRM	FC, engineer, contractor, GRM' committee	Village head, community members, municipality	Monthly /quarterly depends on the issue raise in the project site	Meeting, site visit
	Review on implementation of OHS plan, Waste management plan,	Contractor, engineer	Village members, technical staff, chief of leader	Monthly	Meeting, site visit
	Monitor excavation	Contractor	Engineer, FC	Daily during excavation until finalizing the work	Site monitoring
	Monitoring of the ESMP implementation and technical compliance	Engineers	Contractor	Daily and as required	Site monitoring
	Field monitoring and supervision of the construction works	Engineers, FCs, technical staff from municipality	Contractor, community members, head of village	Daily and as required	Site monitoring, meeting
	Joint Monitoring Visit	PMU, MSA, IPS, RPS	UNDP, PMU, Ministries, Contractors, community members, local authorities, head of village, community	Monthly or as required	Site monitoring visits, meetings
Post-Construction Phase/Demobilization	Clean -up site and demobilization of the contractor's plant, equipment and labour	Contractor	Community from respective village, community leader, AP leader	After completion of construction	Construction Site

Output	Activity	Responsibility	Stakeholders	Frequency (Estimated time)	Nature of Activity
	Establishment of maintenance group (Community Maintenance Group)	MSA, PDIM, FCs, Technical engineer	Community members	During defect period and after hand over to local authorities	Once at project site
	Defects Liability - Retention period	Contractor	MSA, PMU Engineer, FC, community leaders and members, municipal technical staff	6 months defect liability period before hand over fully	Construction Works during the defects period
Maintenance	Operation and Maintenance of the project	MSA, PDIM, MOPW,	MSA, MoPW, community leaders and members, municipal technical staff	Ongoing after project's completion	Maintenance & Operations of the Project

Annex 3 – Grievance redress mechanism

A3.1 Grievance Redress Mechanism

1. The Grievance Redress Mechanism has been designed to be problem-solving mechanism with voluntary good-faith efforts. The Grievance Redress Mechanism is not a substitute for the legal process. The Grievance Redress Mechanism will as far as practicable, try to resolve complaints and/or grievances on terms that are mutually acceptable to all parties. When making a complaint and/or grievance, all parties must act at all times, in good faith and should not attempt to delay and or hinder any mutually acceptable resolution.
2. In order to ensure smooth implementation of the Project and timely and effectively addressing of problems that may be encountered during implementation, a robust Grievance Redress Mechanism, which will enable to the Project Authorities to address the grievances of the stakeholders of the Project has been established.
3. All complaints and/or grievances regarding social and environmental issues can be received either orally (to the field staff), by phone, in complaints box or in writing to the UNDP, MSA or the Construction Contractor. A key part of the grievance redress mechanism is the requirement for the MSA/PMU and construction contractor to maintain a register of complaints and/or grievances received at the respective project site offices. All complainants shall be treated respectfully, politely and with sensitivity. Every possible effort should be made by the MSA/PMU and construction contractor to resolve the issues referred to in the complaint and/or grievance within their purview. However, there may be certain problems that are more complex and cannot be solved through project-level mechanisms. Such grievances will be referred to the Grievance Redress Committee. It would be responsibility of the MSA to solve these issues through a sound / robust process.
4. The Grievance Redress Mechanism has been designed to ensure that an individual and/or group are not financially impacted by the process of making a complaint and/or grievance. The Grievance Redress Mechanism will cover any reasonable costs in engaging a suitably qualified person to assist in the preparation of a legitimate complaint and/or grievance. Where a complaint and/or grievance is seen to be ineligible, the Grievance Redress Mechanism will not cover these costs.
5. Information about the Grievance Redress Mechanism and how to make a complaint and/or grievance must be placed at prominent places for the information of the key stakeholders.
6. The Safeguards officer in the PMU will be designated as the key officer in charge of the Grievance Redress Mechanism. The Terms of Reference for these positions (as amended from time to time) will have the following key responsibilities:
    - coordinate formation of Grievance Redress Committees before the commencement of constructions to resolve issues;
    - act as the focal point at the PMU on Grievance Redress issues and facilitate the resolution of issues within the PMU;
    - create awareness of the Grievance Redress Mechanism amongst all the stakeholders through public awareness campaigns;
    - assist in redress of all grievances by coordinating with the concerned parties;
    - maintain information on grievances and redress;
    - monitor the activities of MSA on grievances issues; and
    - prepare the progress for monthly/quarterly reports.
7. A two tier Grievance Redress Mechanism structure has been developed to address all complaints and/or grievances in the project. The first trier redress mechanism involves the receipt of a complaint and/or grievance at the site and/or administrative district level. The stakeholders are

8. informed of various points of making a complaint and/or grievance (if any) and the PMU collect the complaints and/or grievances from these points on a regular basis and record them. This is followed by coordinating with the concerned people to redress the grievances. The Safeguards Officer of the PMU will coordinate the activities at the respective District level to address the grievances and would act as the focal point in this regard. The Community Development Officer of the Local Authority or in the absence of the Community Development Officer, any officer given the responsibility of this would coordinate with the Safeguards and Gender Manager of the PMU and MSA in redressing the grievances. The designated officer of the Local Authorities is provided with sufficient training in the procedure of redress to continue such systems in future.
9. The grievance can be made orally (to the field staff), by phone, in complaints box or in writing to the UNDP, MSA or the Construction Contractor[16]. Complainants may specifically contact the Safeguards Officer and request confidentiality if they have concerns about retaliation. In cases where confidentiality is requested (i.e. not revealing the complainant's identity to UNDP, MSA and/or the Construction Contractor). In these cases, the Safeguards Officer will review the complaint and/or grievance, discuss it with the complainant, and determine how best to engage project executing entities while preserving confidentiality for the complainant.
10. As soon as a complaint and/or grievance is received, the Safeguards Officer would issue an acknowledgement. The Community Development Officer receiving the complaint and/or grievance should try to obtain relevant basic information regarding the grievance and the complainant and will immediately inform the Safeguards Officer in the PMU.
11. The PMU will maintain a Complaint / Grievance Redress register at the Administrative District Level. Keeping records collected from relevant bodies is the responsibility of PMU.
12. After registering the complaint and/or grievance, the Safeguards Officer will study the complaint and/or grievance made in detail and forward the complaint and/or grievance to the concerned officer with specific dates for replying and redressing the same. The Safeguards Officer will hold meetings with the affected persons / complainant and then attempt to find a solution to the complaint and/or grievance received. If necessary, meetings will be held with the concerned affected persons / complainant and the concerned officer to find a solution to the problem and develop plans to redress the grievance. The deliberations of the meetings and decisions taken are recorded. All meetings in connection with the Grievance Redress Mechanism, including the meetings of the Grievance Redress Committee, must be recorded. The Safeguards Officer for the Grievances Redress Mechanism will be actively involved in all activities.
13. The resolution at the first tier will normally be completed within 15 working days and the complaint and/or grievance will be notified of the proposed response through a disclosure form. The resolution process should comply with the requirements of the Grievance Redress Mechanism in that it should, as far as practicable, be informal with all parties acting in good faith. Further, the Grievance Redress Mechanism should, as far as practicable, achieve mutually acceptable outcomes for all parties.
14. Should the grievance be not resolved within this period to the satisfaction of the complainant, the grievance will be referred to the next level of Grievance Redress Mechanism. If the social safeguard and gender officer feels that adequate solutions can be established within the next five working days, the officer can decide on retaining the issue at the first level by informing the complainant accordingly. However, if the complainant requests for an immediate transfer to the next level, the matter must be referred to the next tier. In any case, where the issue is not addressed within 20 working days, the matter is referred to the next level.
15. Any grievance related to corruption or any unethical practice should be referred immediately to the Timor Leste Office of the Attorney General and/or Ombudsman and the Office of Audit and Investigation within the UNDP in New York.
16. The Safeguard Officer from the PMU will coordinate with the respective Commissioner of Local Government in getting these Committees constituted for each State and get the necessary circulars issued in this regard so that they can be convened whenever required.

[16] The table in Section 7.5.1 will be completed for each site-specific ESMP and will contain necessary contact details for each sub-project.

17. The Terms of Reference for the Grievance Redress Committee are:
    - providing support to the affected persons in solving their problems;
    - prioritize grievances and resolve them at the earliest;
    - provide information to the PMU and MSA on serious cases at the earliest opportunity;
    - Coordinate with the aggrieved person/group and obtain proper and timely information on the solution worked out for his/her grievance; and
    - study the normally occurring grievances and advise PMU, National and District Steering Committee on remedial actions to avoid further occurrences.
18. The Grievance Redress Committee will hold the necessary meetings with the aggrieved party/complainant and the concerned officer and attempt to find a solution acceptable at all levels. The Grievance Redress Committee would record the minutes of the meeting.
19. Grievance Redress Committee will communicate proposed responses to the complainant formally. If the proposed response satisfies the complainant, the response will be implemented and the complaint and/or grievance closed. In cases where a proposed response is unsatisfactory to the complainant, the Grievance Redress Committee may choose to revise the proposed response to meet the complainant's remaining concerns, or to indicate to the complainant that no other response appears feasible to the Grievance Redress Committee. The complainant may decide to take a legal or any other recourse if s/he is not satisfied with the resolutions due to the deliberations of the three tiers of the grievance redress mechanism.
20. In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, with both compliance and grievance functions. The Social and Environmental Compliance Unit investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment. The Social and Environmental Compliance Unit is housed in the Office of Audit and Investigations and managed by a Lead Compliance Officer. A compliance review is available to any community or individual with concerns about the impacts of a UNDP programme or project. The Social and Environmental Compliance Unit is mandated to independently and impartially investigate valid requests from locally impacted people, and to report its findings and recommendations publicly.
21. The Stakeholder Response Mechanism offers locally affected people an opportunity to work with other stakeholders to resolve concerns, complaints and/or grievances about the social and environmental impacts of a UNDP project. Stakeholder Response Mechanism is intended to supplement the proactive stakeholder engagement that is required of UNDP and its Implementing Partners
22. throughout the project cycle. Communities and individuals may request a Stakeholder Response Mechanism process when they have used standard channels for project management and quality assurance and are not satisfied with the response (in this case the project level grievance redress mechanism). When a valid Stakeholder Response Mechanism request is submitted, UNDP focal points at country, regional and headquarters levels will work with concerned stakeholders and Implementing Partners to address and resolve the concerns. Visit www.undp.org/secu-srm for more details. The relevant form is attached at the end of the ESMP.

A3.2 Grievance Registration and Monitoring Form

Grievance Registration and Monitoring Form

Reference No:
Date

Complainant Information

1. Full Name Note: you can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent	First name _____ Last name _____ ❑ I wish to raise my grievance anonymously ❑ I request not to disclose my identity without my consent 2. National ID: 3. Gender: ❑ Male ❑ Female
4. Contact Information Please mark how you wish to be contacted (mail, telephone, e-mail).	❑ By Post: Please provide mailing address: _____ _____ ❑ By Telephone: _____ ❑ By E-mail_____
5. Preferred Language for communication	❑ Tetum ❑ Portuguese ❑ Local Dialect: [_____]
Complaint Details: 6. Mode of receiving the grievance:	What happened? Where did it happen? Who did it happen to? What is the result of the problem? □ Letter □ Phone call □ Telephone Message (WA, Text) □ Email □ Verbal complaint (in-person) □ Social Media (FB, etc) □ Others (please specify)
7. Location of the problem/issue specified in the complaint:	Project Reference Code: Municipality Administrative Post Suco Aldeia
8. Type of Problem/Issue:	□ Land Issue/Land acquisition

□ Cultural Issue
□ Construction
□ Environmental
□ Other [please specify] _____

9. Short Description of Problem or Grievance:

_____

_____

_____

10. Date of Incident/ Grievance

11. Short Description of
The factors causing the Problem or Grievance:

12. Who is responsible for causing the problem or grievance?

□ Project Implementation Agency
□ Affected Parties
□ Local Community
□ Project Beneficiary
□ Contractor/Sub-Contractor/NGO
□ Local Authority
□ Others [please specify]

❑ One time incident/grievance (date _____)
❑ Happened more than once (how many times? _____)
❑ On-going (currently experiencing problem)

How action would you like to be taken to resolve the problem?

Details of the focal point that receive the complaint/grievance

Name of the person that receive the complaint:

Position/Designation:

Date:

Action Taken by the receiving Officer:
Description of Action:
Date:

Name of Person completing this form:

Signature: _____
Date: _____

Please submit this form to: [name],
Address _____: Tel.: _____ or E-mail: ____@_____.com

Final Resolution:

To be filled by GRM Committee:

Acknowledge of received:
Name: _____
Position: _____
Date Received: _____
Follow up action (date, venue, line of communication, i.e. meeting, phone call, letter etc).____

Annex 4 – Gender Action Plan

A4.1 Site Description

Project Code/ID:	
Project location:	
Type of infrastructure:	Water Supply Scheme
Planning: PDIM/PNDS	PDIM
Expected duration of the project:	
No. of households affected:	
No. of women:	
No. of men:	

A4.2 Objectives of the Action Plan

The site-specific Gender Action Plan has the following overall objectives:

No.	Objectives	Targets/ Indicators
1	Identify and mitigate risks and adhere to do no harm principles addressing basic mobility and accessibility needs of women and vulnerable groups[17]	- 80% of project design and preparation stage gender action targets achieved - Minimum 40% of each consultation/engagement participants are women and 40% are vulnerable groups (youth, elderly, people with disabilities) - Qualitative and quantitative analysis conducted through discussions on reduced time poverty i.e. release from the drudgery of managing water and caring for family members
2	Design infrastructure project that is more responsive to women and vulnerable groups needs	- 80% of water supply scheme design gender-responsiveness checklist criteria are met
3	Empower women and other vulnerable groups by facilitating equal access to participate and benefit from water supply scheme project	- Women perform minimum 40% of construction labour related to the project with equal pay as men - Minimum 40% of community facilitators engaged in the Operations, Monitoring and Maintenance committee are women and other vulnerable groups - Number of gender based violence (GBV) decrease
4	Ensure women and vulnerable groups participation in all decision making process of the water supply Project	- Minimum 20% women and vulnerable groups lead the water supply project clusters - Men accept women's and other vulnerable groups leadership - Increase women and vulnerable groups ownership to the project, confident, power balance between women, men and vulnerabilities groups. - Accessibilities of resources

[17] Vulnerable group is defined as children, older persons, people with special needs /disabilities and low-income groups (with no access to private transportation such as scooters, motorbikes and cars).

5	Access to better water supply system will facilitate women and other vulnerable groups' maximum access to water, reduce time for collecting water so they will gain extra hours, easier watering of household animals close to home, diversification and expansion of vegetables planting and kitchen gardens	- Women have more opportunity to involve in illiteracy program, save and loans groups, - Improved household hygiene conditions - Increased family access to nutritious food and better house - Increase number of children and girls enrolment and to better education system
6	To strengthen families' economic resiliencies' to climate changes and safety	- Women economic income and capacity to coup with economic shock and hazardous due to climate change Increase - Including early warning, prevention and protection. - More healthy, safe and secure
7	Increase awareness on the project and benefits to households from use of improved water services	- At least 50% of the project households reached by public awareness campaign primarily targeting women and girls. - NGOs working in collaboration with sucos and municipalities responsible for women's issues, Education and municipal Health departments - At least 70% women and girls have access to improved services by end of project - Sanitation awareness and hygiene promotion training kits for dissemination developed for local community/households and school - At least 50% of hygiene promotion teams are women - Community hygiene promotion and sanitation awareness trainings are replicated in sucos on annual basis. - Female representatives of project households trained in water hygiene and sanitation. Trainings include distribution of basic hygiene reference sources to men and women, boys and girls. - Outreach activities for schoolchildren are conducted annually by trained teachers/nurses in all project schools. - At least 40% women participate in project trainings, seminars, workshops and meetings

A4.3 Action Plan for Gender Mainstreaming

The project specific Gender Action Plan consists of a mix of assessments, training, consultations, monitoring and maintenance processes. The GAP is aligned with the project cycle ensuring all project lifecycle incorporates gender principles and increases gender responsiveness of the project.

Key person responsible in overseeing the adherence and achievement of this Gender Action Plan is the Gender Specialist, Municipal Gender FP and M&E Officer, for implementing this GAP is the Engineers, Contractor, Climate Change and Environment Officers and for monitoring is M&E Officer and Field Coordinators and Gender FP.

Abbreviation

CMMG – Community maintenance and Monitoring group, ESIA – Environmental and social impact assessment, GAP – Gender action plan, GFP – Gender focal point, GBV – Gender based violence, WEE – women Economic Empowerment, MSA – Ministry of State Administration, BOQ (Bill of Quantities)

I	**FINAL Procurement and contracts stage**	• Target	Time Frame	Implementing Partners	• Tools/ Methodology
1.1	Award the contractors	• Contractor sign the Contract		Procurement officer Communication officer Field coordinators	• Signing ceremony • document
1.2	Provide orientation and guidance on gender and social inclusion issues to contractor, sub-contractors of local materials , and labour at commencement of work	• Lead contractors or contractors whose workforce with minimum least 30% women included in orientation		Procurement team Gender expert Training expert	Orientation and guidance handbook including equal salary/wages, protection against discrimination and any abuse based on sex, gender, disabilities, age and race
II	**Project implementation stage**	• Target	Time Frame	Implementing Partner	Tools /methodology
2.1	Launching of the project and mobilization meetings	• Launching of gender policy, project implementation plan/schedule are presented • At least 50% of the consultation participants are women and other vulnerable groups		PMU Contractor Field coordinator Chefe Suco and Conselho e Suco	Stakeholder engagement tool Including aware the availability time for women and other vulnerability groups e.g best time for women to participate are Monday and Tuesday
2.2	Identify and provide the list of local worker to the contractors included (both women, men, youth and people with special needs/ disability) For those who have previous experience can have more	• 50 % male • Minimum 50 %: Women, Youth People with Special needs		Chefe de Suco,Suco Council Contractor Delgada- Women representative in Suco council	Consultations/meetings Brief/short interviews List of the beneficiaries

	responsibilities as leader of the groups				
2.3	Divide the workers based on skills, experience, capacity and capabilities Encourage women to lead as project supervisor	- All workers - At least one women as supervisor		Chefe Suco, Delgada - Suco Council, Contractors, Technical officers	Consultations/meetings Brief/short interviews Grouping the beneficiaries according their skills
2.4	Empower by socialization on women rights and gender based violence issue, reproductive health, culture norms, household decision making to encourage women, youth and vulnerable groups to participate in the water supply projects	• 50% of women and vulnerable training participants improve skills and knowledge • Safety measure implemented by the community •		Training expert / partner organization Field coordinator Contractor Delgada- Suco council women's representative and community who owned and house in main road area	Training plan and report e.g.Training plan shall consider location and time to allow women's and vulnerable groups to attend

2.5	Briefing and skills training for women, youth, people with special needs, and male workers from the host suco in performing tasks such as :cleaning the project site, basic construction, monitoring /controlling the water supply use, and maintenance skills	50% of women and vulnerable training participants improve skills		Training expert / partner organization Field coordinator Contractor Delgada- Suco council womens representative	Training plan and report e.g. Training plan shall provide simple example so women's and vulnerable groups will absurd easily
2.6	Socialised and share experience on how to resolve potential problems that may arise in the future: violence, sexual abuse and harassment, and any discrimination against women, youth, and people with disabilities.	• All workers and contractor		Chefe Suco, Lia nain and suco council, Community Police Officer and partners	Meeting

2.7	Training on Women Economic empowerment and leadership including : Technical skills on animal husbandry, market value crop selections, poultry, and identify and linkages to market opportunities. Training on financial literacy, small business skills, Book keeping, packing Training of household decision making on how to utilise the resources Training on save and loans programs	• Women perform at least 30% of unskilled construction labour related to the project with equal pay as men • Assist save and loans group		Contractor Gender expert M&E Officer and NGOs partners NGO's partners	Project design document WEE and Leadership training module, and training Training module, and training
2.8	Both men, women, youth and people with special needs from the community are provided with targeted opportunities to benefit from labour, and direct and indirect services for the construction	• 30%-50 % women, vulnerable groups work as labour for the project		Contractors	Recruitment and list of local workers
2.9	Model gender policy adapted to project site and implemented	• Gender policy and zero tolerance policy on sexual harassment, violence, abuse of workers and community members, and		Gender expert Contractor PMU MSA	Model gender policy adopted by the contractor

		requirements for equal pay and non discrimination regarding women • Regular briefing on gender policy by construction manager		Municipal GFP	
2.10	Construction is implemented in accordance with the gender-responsive design	• At least 80% of the checklist is complied		M&E Officer Gender expert CMG – Community maintenance group	Water management gender responsiveness checklist compliance
III	**Project operations, Monitoring and maintenance stage**				
3.1	Community-based maintenance group established including women, youth and vulnerable people Representative	• Community-based maintenance group (CMMG) composed of 50% men and 50% women and other vulnerable groups • At least one women as maintenance supervisor		Engineer, Chefe Suco and Conselho de Suco, Contractor and relevant NGO's	CMG structure, regulations and mechanism, roles and responsibilities
3.2	Hand-Over/Commissioning of the Project	• Lessons learned and best practices emerging from project monitoring are shared with stakeholders including women lead experience		M&E Officer Field coordinator	Meeting and sharing
3.3	Re active maintenance group – Cabo Wee- to ensure control and balance for water users	• Women and vulnerable groups are consulted and involved in discussion of water users, • Women lead some groups		Community led by suco leader	Volunteer and Rotation
IV	**Project monitoring**				
4.1	Compile gender disaggregated indicators and data	• Achievement of gender policy, gender quotas and gender criteria are monitored and documented • Sex-disaggregated project performance benchmarking system developed by 2023 (data is collected, monitored and evaluated)		Gender expert M&E Officer	Tool 1: Gender analysis

		• Baseline/end-line gender information is collected and incorporated into reporting • Gender-inclusive project monitoring/ evaluation system developed and fully operational • GAP implementation reports are submitted semi-annually and included in overall project • reports			
4.2	Training to Increase capacity of women, youth, people with special needs and men in using technology of collecting data, and monitoring	• Results improved for at least 50% of women and men		Training expert M&E Officer	Training report Simple ICT tools
4.3	Joint monitoring activities are conducted quarterly including using gender analysis to help assess differences in participation, the effect of the project on gender relations, and disparities in the benefits and impacts between women, males and other vulnerable groups .	• >50% of participants are women and 30% are vulnerable groups (youth, elderly, people with disabilities		CMMG committee Municipal GFP M&E Officer Field coordinator	Gender M& E Tool M&E framework for the project
4.4	Best practices and lessons learned on gender-related aspects are documented, and shared.	• Focus group discussion on lessons learned best practices held • Quarterly and annual reports include information on lessons learned. •		M&E Officer, Gender expert, Contractor, Field coordinator	• Meetings • Project final report • Stakeholder engagement tool •
4.5	Information sharing, socialization through utilization of board, sign in the community	• Public awareness campaigns (in collaboration with local government, CBOs, and mass		CMMG, Local Contractors, suco and aldeia leader	• Sign, pictures, caricatures,

	about what can do, can not do or prohibited	media) on water saving and hygiene/sanitation promotion			

GAP Acronyms:

CMG – Community Maintenance Group
GAP – Gender Action Plan
GFP – Gender Focal Point
GBV – Gender Based Violence
NMT – Non-Motorized Transport
SME – Small and Medium Enterprises
STI – Sexually Transmitted Infection

A4.4 GAP tools: Rural water supply design gender - responsiveness checklist

Relevant sections in this checklist are adapted from the Guide on integrating gender into infrastructure developed in Asia and the Pacific: water supply guidelines

#	Key considerations	Yes	No	N/A	Comments
1	Gender concerns and issues documented				
2	Gender mitigation measures developed				
3	Design and setting take into consideration how men, women, vulnerable groups use domestic water in different ways (e.g. who use water and to do what, who use more water)				
4	The design ensures linkages for women, girls, men and vulnerable groups to domestic use and economic initiative use.				
5	The water supply system design and setting take into consideration how women and vulnerable groups affected corridor will be impacted by construction and operation, including safety, GBV				
6	Designs take into account special needs and considerations, including access for persons with disabilities				
7	Gender-responsive training on GBV, and HIV/AIDS awareness is provided for contractors, operators etc.				
8	Economic opportunities for women and other socially-excluded groups are promoted				
	Budget				
10	Allocate budget to fund gender mainstreaming training and this GAP activities				
11	Budget allocated for maintenance to sustain a safe and healthy environment over the long term				
12	Adequate funds for investing in safety measures				
13	Budgets and resources for M&E activities allocated				

Annex 5 – Indigenous People's Plan

A5.1 Executive summary

This Indigenous People Plan (IPP) was prepared based on desk review and field consultation with stakeholders and the Indigenous Peoples (IPs) and data collection at each project site during project and during the conduct of the Environmental and Social Assessment for a number of water supply scheme rehabilitation/construction projects. As this IPP covers all water supply projects, it is not feasible to reflect all site-specific detailed information in this document. During feasibility studies, additional site-specific information will be collected to cover any variation between different sites and included in the plan before the start of the project. The processes proposed under IPP (such as FPIC, GRM and capacity building) will be followed for all water supply schemes to be rehabilitated/constructed under the project.

The IPP was developed based on the FPIC process and consultations with the affected IPs. This includes a series of visits to the project site, meetings with local authorities and consultations with the host community. The local authorities and members of the community participated in the visit for the technical field assessment to gather data and information to prepare technical design and Bill of Quantities (BoQs). The extensive engagement with the host residents and IPs complies with the SESP and requirements and to address specific action to be implemented and monitored during the implementation. The plan has been prepared in accordance with the UNDP Social and Safeguard Policy as an Accredited Entity (AE) to GCF and follows the approved ESMF.

The IPP was designed and the FPIC process followed the structure of the local governance structure and administrative and customary leadership that are recognized in the Decree-Law No. 9/2016, 8 of July, Law on Sucos. The suco council represented by the chefe suco is identified as the key IPP stakeholder and the main representative in the FPIC process.

The traditional and cultural customs upheld in each suco are identified. They concentrate on the use of tara bandu, uma lulik, sau bandu / sau batar and the respect for lulik (sacred) places. The project lifecycle will respect and incorporate these cultural customs through cultural ceremonies at project launch and closing and respect for sacred places.

The list of positive and negative impacts that could be posed by the subproject were identified. Potential positive impacts were – increased safe and reliable water supply; improvements in health; improved school enrolment; improved environmental conditions; improved standards of living; reduced resource use conflicts; employment opportunities/Income generation; local economic development; improved participation of women and youth; resilient and sustainability of infrastructure; increased food and nutrition security due to improved food hygiene; increase in land value within the project area, due to availability of domestic water supply; community project governance. Potential adverse impacts of the project included dust, noise and waste generation during implementation, and they were temporary in nature and related to physical aspects of the project.

FPIC processes were followed in the elements of land use, physical aspects of the project (dust, noise, and waste), project design and participation mechanism of the IPP and comply with the local customary law and tradition. Community's right to withdrawal, terms of withdrawal and process to enable withdrawal of consent were identified and established with the community. The IPP includes communications plan, participatory monitoring plan, feedback and complaints plan (GRM), capacity building and gender action plans based on a series of community consultations and validation. Mitigation measures were identified and included in the IPP and the overall ESMP.

A5.2 Objectives of the IPP

The principal objectives of the IPP and targets are indicated in the table below.

Table 8a Objectives of the IPP

No.	Objectives	Targets
1	Screen project components early to assess their impacts on IPs and to avoid any adverse impacts	• Potential positive and negative impacts are identified with the consultation of the IPs, documented and addressed. • Strategies to avoid and mitigate negative impacts are consulted with the affected IPs.
2	Protect the rights (human, environmental, land and customary) of the affected IPs, especially the most vulnerable ones	• FPIC process is implemented in the process of preparation, implementation, and monitoring of project activities. • Project respects and follows cultural customs and heritage at all phases.
3	Identify the priorities and needs of the community and to ensure they are taken into account	• Priorities and concerns are documented and incorporated into the project design.
4	Enable the IPs to negotiate the conditions under which the project will be designed, implemented, monitored, and evaluated	• Institutional arrangement for planning and implementation of the IPP established and agreed. • Capacity building for the IPs and project stakeholders to implement the project and IPP.

A5.3 Project description

Brief Introduction of the Overall GCF SRC Project

The Green Climate Fund Project is a co-financed project by the Green Climate Fund grant, the Government of Timor-Leste and the United Nations Development Program (UNDP) on 'Safeguarding Rural Communities and their Physical Assets from Climate-induced Disasters in Timor-Leste'. This project targets six municipalities that are highly susceptible to climate-related hazards. This six-year project (2020-2026) is led by the Secretary of State for Environment (SEA) under the Ministry for the Coordination of Economic Affairs (MCAE).

The project focuses on Climate risk reduction and climate-proofing measures for small-scale rural infrastructure, and the development and integration of climate risk into policies, regulations and institutions to inform rural infrastructure planning and management. The project will also support for the development of vulnerability mapping under for a long-term investment planning for small-scale rural infrastructures in six target municipalities in Timor-Leste.

The project objective is to safeguard vulnerable communities and their physical assets from climate change-induced disasters. It aims to address existing institutional, financial and legislative barriers, increasing the climate resilience of vulnerable small-scale rural infrastructure.

The project targets 175,840 direct beneficiaries (51% male, 49% female) with an estimated 15% of the total population. Benefits include to increase resilience and enhanced livelihoods of the most vulnerable people, communities, and regions as well as climate resilience for small-scale infrastructure and 300 ha of reforested and rehabilitated land to buffer against climate-induced disasters. The project will ensure long-term infrastructure resilience via (i) embedding climate resilience standards into the processes through

which small-scale infrastructure is planned, designed, constructed, and maintained; (ii) improving climate hazard and risk assessment capacity and access to climate risk information.

A5.4 Sub-Project Location and Description

The water supply scheme sub-projects being implemented are rehabilitations of existing schemes as construction of new schemes, which in general involve the following elements: The designs will be based on climate risk from drought as well as detailed socio-economics assessment of likely benefits to communities' ability to access reliable safe water supplies from the rehabilitation and construction of water supply systems.

a. Water capture – construction of intake structure, water capture tank installation, drilling of well and pump installation. Works at the water sources includes - site clearance, excavation, setting out the bow plank, building water capturing, setting out the pipeline (inlet and outlet). Building the fence for water source area.
b. Reservoir tank installation (60m3 and 80m3 tanks) - Site preparation, clearance and excavation for building the tank foundation.
c. Distribution tanks construction - Site preparation, clearance and excavation for building the tank foundation.
d. Public taps installation - build the concrete floor of the public tap and box control of the taps.
e. Installation of transmission and distribution pipelines - The excavation of the transmission pipeline from water capturing to reservoir tank and distribution pipeline from the reservoir tank to the distribution tank and to all public taps with dimension of width 40 cm and depth 80 cm. Manual methods of excavation by community beneficiaries as a labour for the project.

The project will address the climatic risks to which the water supply schemes are exposed which include: landslides, soil erosion, flood and drought. Climate risk protection measures include: In the spring area climate proofing interventions include tree planting to protect the water source quality and quantity and ensure longer term supply especially during dry season. The intervention will also include slope protection of the spring source with appropriate interventions such as gabion wall protection and a combination with soil bioengineering using the vetiver grass planting and tree planting to reduce the erosion and landslide during rainy time. Along the route of the transmission pipeline, slope protection is also being implemented on steep slopes. All of the climate risk reductions measures considered in the rehabilitation and construction works will be carried out along the entire alignment of the schemes.

Given that all schemes will be community managed water supply schemes, following the rehabilitation works, the scheme will be operated and maintained by the community with the beneficiaries as representatives on the Community Maintenance Group (CMG) to ensure sustainability of the investment and the benefit of the project for the longer term after the expiration of the defects' liability and hand-over.

The planned works will involve site preparatory works and clearance, excavation of water pipeline routes, topsoil removal, compaction, drainage, cross drainage and cross drainage structures, gabion installation and soil bioengineering works.

The construction-related short-term impacts to the environment such as dust pollution, vibration, and noise that will result from the construction are predictable and manageable with appropriate mitigation measures proposed. No negative impacts on cultural or heritage sites are foreseen from clearance or excavation works. However, a Chance Find Procedure has been developed in case any unknown object or site of cultural significance is discovered during the construction works. To ensure that these mitigation measures are implemented, and that negative impacts are avoided, measures have been included in the BOQ for the works and specifications. Although the sub-projects will have minimal negative impacts, these will be carefully monitored and mitigated during implementation. The project will ensure full compliance with the Environmental and Social Management Plan (ESMP). Regular and consistent monitoring and timely interventions to mitigate and prevent the potential negative impacts will be undertaken by the project team.

The ESIA study and ESMP document that was prepared takes into consideration all the socio-economic, environmental and cultural aspects related to the climate resilient rehabilitation of the water supply schemes. The project has been prioritized for rehabilitation by the GCF-SRC project through the Municipality Integrated Development Planning (PDIM) framework.

The checklist for appraising whether FPIC process is required, was applied and consultation undertaken extensively with the project stakeholders. Sub-projects were screened using the process described in the ESMF to determine whether the FPIC process need to be carried out and whether the sub-project may affect rights, lands, territories, and resources of indigenous peoples identified through this process. No negative impacts on cultural or heritages sites are foreseen from clearance or excavation works or from implementation of the rehabilitation works during the construction phase.

A5.5 Description of Indigenous Peoples in the project area

Features of indigenous cultures in Timor-Leste

The population in Timor-Leste mainly consists of East Timorese and a small fraction of people who are not ethnically East Timorese. The population is both multiethnic and multilingual, with 20 individual languages in use (19 indigenous languages and one non-indigenous)[18]

Ethnic groups fall into two main categories of origin: Malayo-Polynesian and Papuan origin. The ethnic groups of Malayo-Polynesian origin include Austronesian (Malayo-Polynesian) includes Tetun, Mambai, Tokodede, Galoli, Kemak, Baikeno. The Melanesian-Papuan includes Bunak, Fataluku, Makasae and there is also a small Chinese minority.[19] The lingua franca and national language of Timor-Leste is Tetum, with which it has equal status as an official language.[20] The Tetum (100,000) are the largest Malayo-Polynesian group and are mainly found around the capital, Dili, and the north coast. The largest ethnic group of Papuan origin are the Bunak (85,000), Fataluku (45,000) the Makasae (75,000).

[18] https://www.ethnologue.com/country/tl
[19] https://www.worldatlas.com/articles/what-is-the-ethnic-composition-of-timor-leste.html
[20] http://easttimorgovernment.com/languages.htm

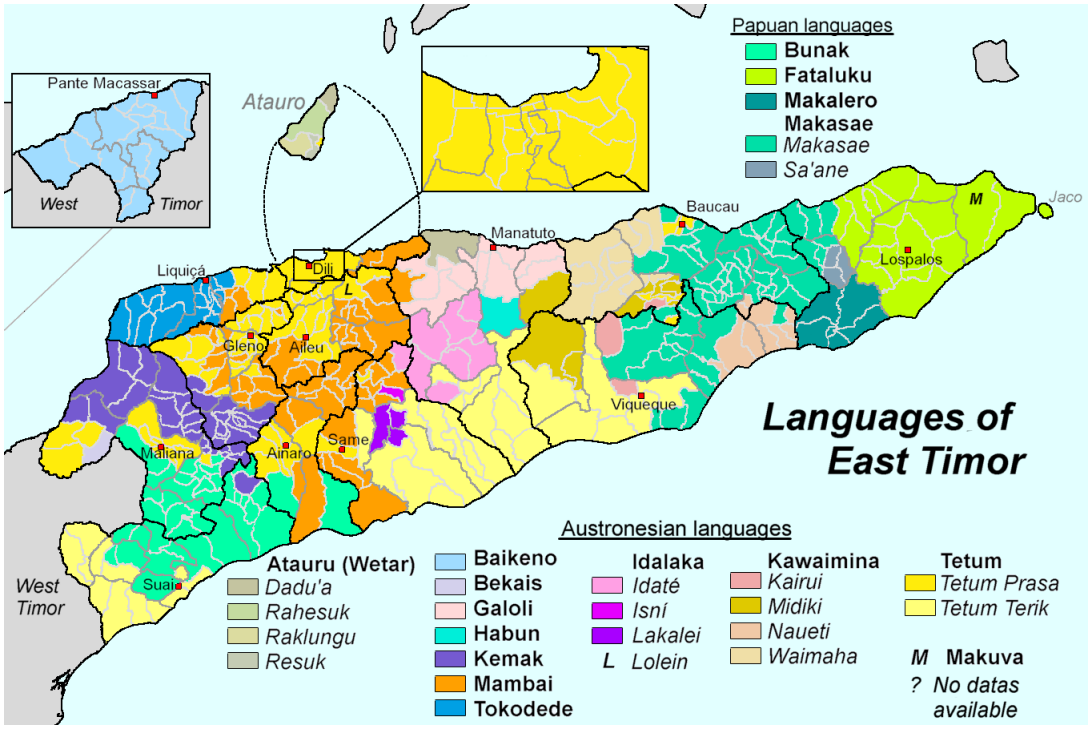


Figure A8- 1: Languages of Timor Leste[21]

A5.6 Local political governance structure

The local governance structure consists of both administrative and customary leadership that are recognized in the Decree-Law No. 9/2016, 8 of July, Law on Sucos. In particular, the suco (village) and aldeia (hamlet) chiefs are important in fulfilling the roles of administrative and customary leadership. The current IPP was designed and the FPIC process followed the structure of the local governance structure and processes.

The Suco Law was written to help ensure that development and basic services are achieved within the community and provides legal responsibilities of sucos, its governance mechanism and necessary functions. in this regard, the responsibilities of the sucos include but not limited to (as stipulated in Article 6 of the Law):

- Promote the resolution of conflicts that arise between the community members or between aldeias, in accordance with the traditions and practices of the community and the respect for the principle of equality
- Promote and defence the Knua as fundamental elements of the cultural identity of the Timorese People
- Preserve the existence uma-lulik or uma-lisan in the community
- Collaborate in the organization of festivities, ceremonies, rituals and other activities for the affirmation of the traditions, practices and customs that form the identity of the community
- Promote the holding of activities for the intergenerational transmission of practices, traditions and customs of the local community.

[21] Source: https://upload.wikimedia.org/wikipedia/commons/d/d9/Sprachen_Osttimors-en.png

- Disseminate the laws, regulations, deliberations and decisions produced by the organs of the State, as well as the customary law rules, that are of interest to the community.
- Inform the Municipal Administration about the existence of underage children at risk in the community, as well as individuals in social exclusion or vulnerability situations.
- Promote the creation of community cooperatives.

Key parties included in Suco Governance system are the Suco Council; the Suco Chief; the Aldeia Assembly and the Aldeia Chief. The suco council and aldeia assembly form both the traditional socio-political structures at the suco and aldeia levels and the statutory processes.

- The Suco Council: the council has the responsibility to approve the Suco Community Development Plan, recommendations of the Suco Chief and Aldeia Chiefs for the promotion of the traditions, practices and customs of the community; recommendations for the improvement of the Suco services. According to Article 10, the Suco Council consists of:
    - The Suco Chief
    - The Aldeia Chiefs of the Suco
    - A female delegate from each Suco's Aldeias
    - A male delegate from each Suco's Aldeias
    - A female youth representative from the Suco
    - A male youth representative from the Suco
    - A lia nain.
- The Suco Chief: Article 23 sets out the roles and responsibilities of the Suco Chief as both statutory and customary leader. The Suco Chief represents the suco with external parties, convenes and chairs the Suco meetings, promote community consultations regarding matters of its general interest, namely in the field of planning and community development; awareness raising on various issues, implementation of agreed upon programmes and policies, mediate conflict or disputes between community members and aldeias and acts as intermediary between the suco and other parties. The suco chief (xefe suco) also has the responsibility to communicate to the competent authorities the existence of environmental problems, namely the existence of polluted areas, soil erosion areas and cutting of trees.
- The Aldeia Assembly (Article 26) is responsible for choosing the Aldeia Chief; choosing a female and a male delegate to the Suco Council and for providing opinion on the impact of various public policies and the governmental and municipal programs on the Aldeia development process and other initiatives.
- The Aldeia Chief (Article 33) is responsible for representing the interest of aldea members at the suco council meetings, disseminate information to aldeia members on legislation, regulations, public policies, and programmes; carry out the resolutions of the suco council at the aldeia level, resolution of minor conflicts or disputes that involve aldeia members; identify situations of extreme poverty and social exclusion affecting aldeia members and inform the suco chief, and to undertake various sensitization and mobilization activities of the aldeia members.

Hence the suco and aldeia council members are identified as the key IPP stakeholders and the main representative in the FPIC process is the Chefe suco (suco chief).

Tara bandu and other traditional beliefs and norms

The local indigenous peoples in Timor-Leste have several social and traditional norms followed and bear the legacy of their ancestors from the past. These norms include tara bandu (prohibition), na'in (guardian of nature) and others.[22]

Tara bandu is a regulatory mechanism aimed at governing the relationships among humans and between human and non-human entities (spaces, objects, animals, crops, the state, the environment). It can be considered both a custom-based regulatory mechanism and a newly supported organizational form. The Tara bandu system operates de-facto in parallel to the formal justice system and remains the favoured mode of dispute resolution. Endorsement of the Tara bandu requires ritual performance. Penalties for violating its provisions may include payments of foodstuff and animal meat that are consumed in a public event.[23]

There are three key steps in Tara bandu[24]:

- Specifically prohibited activities are determined at a public meeting of community members (e.g. burning of forests, the cutting of trees, collection of forest products, agricultural harvests, and hunting and fishing in a forbidden zone for a defined period of time, conflict resolution mechanisms).
- The community conducts a public ceremony to announce its enactment of the determined prohibition. A ritual authority figure (lia nain) takes the leading role in conducting the ceremony. The ceremony consists of a set of ritual forms such as an altar is established, an animal is sacrificed, and the animal blood is poured over the land. Items are hung on the altar to inform the community about the prohibition.
- As an enforcement mechanism, fines are determined by the community leaders and are imposed on any individual who is caught violating the regulation. Violators usually pay their fines in kind—by giving the community leaders an animal.

Other important beliefs include[25]:

- *Lulik*: The realms of the sacred, the holy or the taboo. It has been defined as spiritual potential and even magic. All considered lulik is set apart, potentially bounteous but equally dangerous and malevolent if not correctly approached (McWilliam, 2003).
- *Uma lisan:* Literally “traditional house”. Kin group with a common original ancestor.
- *Uma lulik:* Sacred house of each Uma lisan. Considered to be located in the original land of the kin group.
- *Rai na’in:* Literally “landowner”. It can refer to the lineage with a preferential access over a given land or to the spirit that inhabits the land.
- *Rai na’in kar bua malus:* Ritual authority of the lineage with the role of dealing with all matters linked to the realm of the lulik.
- *Sau-batar/sau-hare: A*fter the harvesting of corn and rice before the members of each clan could feast on the harvested goods. Moreover, there are also different kinds of foods or drinks that are considered *lulik* (prohibited) from being consumed by each member of the clan.[26]

The traditions upheld by each *uma lisan/lulik* and sucos in terms of their *tara bandu* can vary.

[22] F Fios *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **801** 012010
[23] Tara Bandu as a coastal and marine resource management mechanism: A case study of Biacou, Timor-Leste, Enrique Alonso Población, Pedro Rodrigues and Robert Lee, FAO, 2016
[24] Customary law and community-based natural resource management in post-conflict Timor-Leste, Naori Miyazawa, 2013
[25] Tara Bandu as a coastal and marine resource management mechanism: A case study of Biacou, Timor-Leste, Enrique Alonso Población, Pedro Rodrigues and Robert Lee, FAO, 2016
[26] https://us.boell.org/en/2021/10/22/summary-some-indigenous-knowledge-timor-leste-and-its-relevance-climate-action

A5.7 Ethnic and socio-economic profile of affected IPs

For each sub-project a detailed profile of the IP will be prepared by PMU during pre construction phase consultation as part of the feasibility study, using project FPIC survey tools (attached as Annex b). In addition, IPP form attached as Annex C will be also used for data collection

When developing the detailed Indigenous People profile and screening for risks to individual water supply scheme specific information that takes account of the rights, needs, and perspectives of indigenous communities is collected to enable a comprehensive understanding of the community and potential impacts. Engagement and consultations with the IP communities ensures a robust process for obtaining Free, Prior, and Informed Consent is in place, respecting the rights of indigenous communities to participate in decision-making processes related to the project. The types of information that will be collected includes:

1. **Demographic Data:** Data on the size, composition, and distribution of the indigenous community, including information on population, age groups, gender, and ethnic diversity. This helps understand the community's social dynamics and the specific needs of different segments.

2. **Cultural and Traditional Practices:** Information about the cultural and traditional practices of the indigenous community, such as customary governance systems, traditional livelihoods, land tenure systems, and spiritual beliefs. This helps identify potential impacts on cultural heritage and traditional practices.

3. **Socio-cultural Context:** Socio-economic conditions: Assess the socio-economic characteristics of the indigenous communities, including livelihood patterns, income sources, poverty levels, and access to basic services. Identify the indigenous community's livelihood strategies, including their dependence on water resources. Data is collected during consultations with communities and is used to complement data from the most recent national census on socio-economics situation.

4. **Traditional knowledge and practices:** Collection of information on the traditional knowledge, practices, and customary systems related to agriculture, water management, conservation and sustainable natural resource use that may be relevant to the water supply scheme sub-project. Information about the cultural and traditional practices such as customary governance systems, traditional livelihoods, land tenure systems, and spiritual beliefs. This helps identify potential impacts on cultural heritage and traditional practices.

5. **Cultural significance:** Cultural significance of the land, water, and other natural resources to the indigenous communities, including spiritual beliefs, traditional ceremonies, and cultural heritage.

6. **Land and Resource Tenure:** Land rights and ownership: Information on the land tenure systems and indigenous land rights in the sub-project area, including customary land tenure practices, collective ownership, and any recognized legal rights. Landownership profile of households living along the alignment is collected and mapped, including agricultural plots. Assess any potential conflicts or overlapping claims over land or water resources.

7. **Resource use and access:** Assessment of the historical and current patterns of indigenous resource use, including water sources, forests, agricultural lands, and grazing areas, and any

potential impacts or changes resulting from the irrigation scheme. Determine the indigenous community's current access to water sources, including traditional water collection practices and existing water supply schemes. Assess any water-related challenges or constraints faced by the community, such as water scarcity, water quality issues, or limited infrastructure.

8. **Grievance Mechanisms and Conflict Resolution:** Identify existing customary grievance mechanisms and conflict resolution processes available to indigenous communities. Ensure that the sub-project includes appropriate mechanisms for addressing grievances and conflicts that may arise during sub-project implementation and respects customary grievance and conflict resolution processes.

9. **Potential Impacts and Mitigation Measures:** Cultural impacts: Potential impacts of the water supply scheme sub-project on the cultural integrity, traditional practices, and social cohesion of indigenous communities are identified, and appropriate measures to preserve and respect cultural values and practices are discussed with them.

10. **Livelihood impacts:** Potential effects of the sub-project on indigenous livelihoods, including access to natural resources, changes in agricultural practices, and income-generating activities are assessed and mitigation measures to minimize adverse impacts and promote sustainable livelihood options developed.

11. **Land and resource rights:** Any potential risks or conflicts related to land and resource rights are identified, and adequate measures put in place to respect and protect indigenous land tenure and resource rights.

12. **Social and Environmental Vulnerabilities:** The social and environmental vulnerabilities of the indigenous community, such as exposure to climate risks, displacement risks, marginalization, and unequal power relations. This helps assess potential impacts and design appropriate safeguards and mitigation measures.

13. **Benefit sharing:** Mechanisms for equitable benefit sharing and the involvement of indigenous communities in decision-making processes, sub-project governance, and potential economic opportunities associated with the irrigation scheme are identified.

Crucially, the approach to the collection of this information is done through meaningful and inclusive engagement with indigenous communities, respecting their rights, customs, and traditions. Engaging indigenous representatives, community leaders, and local organizations with expertise in indigenous issues helps ensure an accurate and culturally appropriate Indigenous People profile is developed.

To ensure accuracy and cultural sensitivity consultations, the sub-project ensures the involvement of local experts and engages directly with the indigenous communities including community leaders (suco chiefs) and members of the community.

Rural populations of Timor Leste are highly exposed to a number of hazards including flash floods, landslides, soil erosion, coastal flooding and drought, due to unfavourable terrain, socio-economic factors and intensification of these climate-induced hazards over time. In addition, anthropogenic factors such as poor, non-climate-resilient design and application of infrastructure construction standards and the limited investment in operation and maintenance, are exacerbating exposure and resulting in the failure of small-scale rural infrastructure, which is essential to the development of rural communities. Impacts include isolation of communities when roads and bridges are damaged by localized extreme events, contamination of unprotected water sources, reduction in yield of water supply sources due to droughts, flooding of communities due to inadequate or failing flood defences. In addition, the institutional and financial capacity of Local Administrations and communities to adapt to the situation is weak. This includes the ability of municipality planning officials, engineers and decision makers to identify areas that are critically vulnerable

to climate hazards, to draw the links between ecosystems management and infrastructure development, and to identify, appraise, prioritize, design, cost and 'budget in' greater resilience measures. There is also a weak ability to understand and address gender and climate change related development and equity issues at local level.

Economy, employment and income

According to UNHDR 2019 Statistical Annex Timor Leste is 1.7 times below the average employment rate for developing countries and 1.9 times below the rate for the region. This trend is magnified when the gender disaggregate data is examined with the rate of employment among TL females being 2.5 times less than the regional average while males are 1.6 times below the rate of employment regionally. The working poor is 66.9% compared to the regional average of 23.8%. Youth unemployment is in line with the average for developing countries at 14.8%, but below the regional average of 18.6%, but this may mask the fact that a larger than average percentage of the potential Timor Leste work force is comprised of the youth (Population median age of 16.9 years). 50% of employment is in agriculture while 40% is in services.

An analysis was undertaken of demographics, employment and economic activity using the 2015 census data for the 6 municipalities. On average, 41% of the population is younger than 15 years old, while 46% is of working age (17-60 years old) and 7% older than 65 years.

On average 46% of working age people (53% male, 38% female) are employed while 53% are economically inactive (45% male and 60% female).

On average 48% of households are involved in backyard only agriculture, 46% produce mainly for home consumption with some sale, while 3% produce mainly for sale with some home consumption.

Most households produce maize (82%), casava (77%) and sweet potato (69%) while approximately 60% produce vegetables, beans, fruit and coconut, 50% produce coffee, 40% timber, 36% rice and 25% others. Many households rear chickens (87%) and pigs (85%), while 30% on average rear goats, cattle/cos and other.

Cultural belief and sacred areas: The traditional and cultural customs upheld in suco Uani-Uma also concentrate on the use of tara bandu, uma lulik, sau bandu / sau batar and the respect for lulik (sacred) places. The first Tara Bandu was instituted in 2004. In January 2017 the Tara bandu was reenacted with a few changes to the regulations/suco Law. Sau Bandu was done in 2018. The IPP respects and is implemented in line with the suco tara bandu (see Annex 5b on FPIC processes using tara bandu).

A5.8 The Legal and Institutional Framework Applicable to Indigenous Peoples

An analysis of the regulatory compliance between UNDP's SES and Timor-Leste national laws and regulations is provided in Chapter 3 of this ESMP. Although the national legal and institutional framework does not specifically spell out 'indigenous peoples', they reflect important elements of the SES Standard 6: inclusion and participation of affected communities; respect for traditional and local knowledge and customs in both administrative and customary affairs; information transparency to stakeholders, and avoiding and minimizing likely environmental impacts, including biophysical and socio-economic effects. The list of relevant national and international legislation and policies is provided below.

Legislation, Policies and Regulations

Under the portfolio of the Secretary of State for Art and Culture, Ministry of Higher Education, Science and Culture and Ministry of Justice, the following legislations are relevant to the project with respect to IPs:

- Government Resolution No. 25/2011 of 14 September, on the Protection of Cultural Heritage; to affirm that through culture, Timor-Leste should position itself in preserving, enriching, and safeguarding its identity, and the protection of culture, ensures the continuity and transmission over

generations, the historical and ethnographic legacy of our ancestors and achievements and contemporary values.

- In 2009 the Government signed the Resolution 24/2009 approving the National Cultural Policy (Política da Cultura Nacional, Pt.3). This was the first formal and official document that established a conceptual political framework regarding the definition and protection of National Culture and Heritage.
- Decree-Law No. 9/2016, 8 of July, on Law of Sucos, provides legal responsibilities of sucos, its governance mechanism and necessary functions to improve administrative capability and authority. The Law directly states sucos are integral in the 'improvement of the life conditions of the populations and the socioeconomic progress of the country' and must promote and protect the cultural, social, economic and human rights of the community.
- Decree Law No. 33/2017 of 6 September, on Cultural Heritage of Timor-Leste, to create condition for inventorying, preserving, protection and valuing the Timorese cultural heritage. It also highlights the citizen responsibility in guaranteeing the cultural diversity, contributing to the protection and dissemination in many sorts of cultural heritage.
- The Government Constitutional Amendment to change Article 54, paragraph 4, to clarify that land ownership is allowed for all East Timorese natural persons as well as juridical persons, i.e., include a wider range of nationals, regardless of their age and ability to exercise political rights. In such event, minors and national legal entities would be considered 'citizens' and, hence, have access to land ownership.

In addition to that, the Government also recognize and customary tenure to give to community leaders or leaders of clan to determine the use of land, allocation, transfer among others based on community needs.

A5.9 Multilateral Agreements and Protocols relevant to Indigenous Peoples

The relevant international agreements and protocols for IPs are as follows:

- Convention of the Rights of Persons with Disabilities
- Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment
- International Covenant on Economic, Social and Cultural Rights
- Convention on the Elimination of All Forms of Discrimination Against Women
- International Covenant on Economic, Social and Cultural Rights
- Convention for the Projection of All Persons from Enforced Disappearance
- International Convention on the Elimination of All Forms of Racial Discrimination

A5.10 UNDP Social and Environmental Safeguard

UNDP's SES, and Project Level Standard 6: Indigenous Peoples provides guidance to ensure the full, effective and meaningful participation of indigenous peoples in a manner which aligns with their distinct vision and development priorities, building sustainable partnerships with indigenous peoples as companions in development and conservation efforts.

Through implementation of Standard 6 UNDP aims to avoid adverse impacts on indigenous peoples, their rights, lands, territories, and resources; mitigate and remedy impacts that cannot be avoided; support countries to implement human rights obligations; and ensure equitable and culturally appropriate benefit sharing with indigenous peoples. This IPP is prepared in line with the Guidance Note on UNDP's SES Standard 6 and UNDP SESP.

A5.11 Indigenous Peoples Policy

GCF Indigenous Peoples Policy seeks to increase the capacity of indigenous peoples to fully exercise their rights to, and interests in, land, territories and natural and cultural resources, and ability to participate in

and benefit from development initiatives and climate change actions. The Policy outlines the actions to minimize and/or compensate for the adverse impacts and identify opportunities and actions to enhance the positive impacts of a project for indigenous peoples in a culturally appropriate manner.

Similary, the UNDP SES, including Standard 6 on indigenous peoples, is also based on the mitigation hierarchy with one of the main objective to avoid adverse impacts on the rights of the indigenous peoples, their lands, territories, resources, to mitigate and remedy residual impacts, and to ensure provision of just and equitable benefits and opportunities for indigenous peoples in a culturally appropriate manner. In addition, UNDP also ensure participatory approach to verifying project designed in manner consistent with Standard 6 and ensure arrangements for participatory joint monitoring of project implementation with indigenous peoples.

The Indigenous Peoples Policy operational guidelines provide clear framework for preparing project IPP in line with the UNDP SES Standard 6..

A5.12 Social and Environmental Assessment in the project location

Assessment methodology and appraising Free, Prior and Informed Consent (FPIC) for the Sub-Project

This IPP was prepared at each sub-project site on the basis that none of the interventions will require the displacement/resettlement of people. As the SESP screening results for the project indicates a Moderate Risk, SES Standard 6 checklist was used (Annex 5a) in appraising Free, Prior and Informed Consent (FPIC) for the Sub-Project. Of the nine questions, one question had the answer 'Yes', therefore requiring FPIC process: '*Will the activity involve the accessing of traditional knowledge, innovations, and practices of indigenous and local communities*?'

Hence the social and environmental assessment was conducted as part of the ESMP and IPP preparation. Using the results, management and mitigation measures were prepared with consultation of the IPs.

- First, a review of the basic socio-economic indicators and conditions of the households is conducted (summaries presented in section 5.7.1 and in this section).
- Second, the GCF/UNDP Project's Field Coordinator and the Engineers conducted pre-assessment using a semi-structured interview with the suco chief – covering various environmental and socio-economic areas whilst pre-identifying potential risks (see Annex 1 Section A1.3 for the completed pre-assessment form).
- Third, using the pre-assessment result, the GCF/UNDP project team conducted a participatory assessment (see Annex 2 of this ESMP for meeting minutes) with the representatives of the IPs. The participatory assessment includes documenting geographic and demographic information gathered through participatory mapping of the land (GIS) – walking with the community through the water supply scheme alignment and record coordinates of the landmarks, assets, livelihood areas and sacred sites. Local authority representatives (Chefe suco and chefe Aldeia) along with the residents of the community participated in the site assessment, together with the engineers, and did the linear measurements of the route and identification of the spots where there will be a need for river crossings and slope stabilization.
- After the participatory assessment and draft plan, as part of the iterative discussions with the affected community, the GCF/UNDP project team had consultation with local leaders to validate the participatory monitoring plan, communications plan, capacity building plan and gender action plan.

Table A8- 1: Social and Environmental Assessment Methods

Method	Tools	Topic areas
Desk review	• 2015 Census data • SEIA 2.0 survey results for suco Uani-Uma	• Socio-economic baselines • Priority development areas

	SEIA 2.0 - Covering 28 households and 126 household members	
Key informant interview	• Pre-assessment interview conducted by the Field Coordinator with the Suco chief (see *Annex 2)*	• Community structure, relationships, and potential conflict • Public assets • Land ownership and land use • Sacred places and house • Access to WASH and basic services • Livelihood sources of the community including agriculture • Status and traditional exercise related to Tara Bandu • Identify suco development priorities • Skills of the local workers • Natural disaster history • GPS coordinates of the project area (start point, mid-point and end point)
Participatory community assessment	• Group discussion on views and concerns related to Project and potential positive/negative impacts • Geo-spatial mapping and measurement (done with community) • Group discussion on potential mitigation measures and Project design (including communication plan, O&M plan and GRM)	• Women and men's views and concerns regarding the Project • Access to services • Livelihood • Women and men's differential use of the water supply scheme • Land use • Waste management • Pollution • Customary laws and holy sites • Preferred communication plan with the Project

A5.13 Assessment results: Identification of potential impacts

Identification of the potential socio-economic, environmental and cultural impacts related to the climate resilient rehabilitation of the water supply projects indicate the following:

- Overall, the water supply schemes provide water supply for domestic use. However, the current systems are dilapidated and unreliable and therefore require rehabilitation, while in other areas there is no formal water supply systems so they need to be built from scratch. These issues limit the reach of the supply, which means that households further away from water sources have unreliable, or no supply or have to walk long distances to reach them. Existing water supply schemes are also at risk from climate-induced hazards – landslide, erosion, floods and drought. In addition, the source is at risk of erosion and pollution.

- Priority livelihood and development areas of the communities are food and cash support, food security, disaster risk management and prevention from landslides, erosion, drought and floods. Also, there is a strong social cohesion in the IPs – trust in each other and support and cooperation.
- Potential adverse impacts of the project during implementation identified are – temporary negative impacts at the project site including dust, noise and waste.
- Potential positive impacts/benefits identified are – Increased safe and reliable water supply; Improvements in health; Improved school enrolment; Improved environmental conditions; Improved standards of living; Reduced resource use conflicts; Employment opportunities/Income generation; Local Economic development; Improved participation of women and youth; resilient and sustainability of infrastructure; Increased food and nutrition security due to improved food hygiene; Increase in land value within the project area, due to availability of domestic water supply; Community project governance., and enhanced community resilience to climate induced disasters (resilience against drought to which water supply is vulnerable, water supply scheme resilient to landslide, erosion and floods).
- Table below summarizes the social and environmental impacts found during the pre-assessment and participatory assessment.

Table A8- 2: Identified social and environmental impacts (positive and negative) and feedback on project design

Areas	Assessment results	Risk and Impact
Social impacts		
Gender and inclusion	The rehabilitation/construction of the water supply schemes will bring positive impacts especially for women. Participatory assessment revealed the current schemes do not reach whole communities and schemes are absent in other areas, which poses significant challenges to the community especially women. Issues identified were: - Uneven access to water supply depending on distance from source resulting in water use conflict. Water distribution issues, faulty distribution pipes, lead to uneven access. - There is currently conflict over water in few areas over distribution and time of collection especially when water is less during the dry season. The rehabilitated scheme will avoid conflict caused by water use. - With the rehabilitated scheme, Women: Water supply is used for domestic and hygiene uses, kitchen gardens, household needs such as wash clothes, watering animals. It is essential for livelihoods. - Can learn new skills - Women are ready to organize themselves – to give women opportunity to work. - Currently men usually dominate all infrastructure projects – due to traditional roles. - Normally when contractors come, they only ask men and don't really approach women. If they approach women, women are ready and we have experience. - Suco chief: In the implementation of infrastructure projects: The family female members support the men already.	Rehabilitated/new and climate proofed water supply schemes results in positive impact on equity of access to water, reliability of supply, reduced water carrying times for women, improved accessibility for people with disability, improved operation, maintenance and management of the water supply scheme. Both women and men participate in project implementation. People with disability and youth also participate.

Areas	Assessment results	Risk and Impact
	- Women: In the household they have big family so women can switch their duties – like cooking and taking care of children while other women work. - Men and women if they're working in infrastructure projects, they usually get same pay per day. - Disabilities: People with disabilities in the suco can participate in infrastructure projects. They have skills – such as operating pumps, construction, carpentry – badain (skills in Tetum). - Before the project - Xefe suco and 2 female delegates to the suco council can create a list of participants in the project – youth, people with disabilities, women and men. -	
Livelihoods	• The current schemes have limited reach and need refurbishment or are missing altogether. Rural water supply schemes are significantly affected by erosion and landslide and is at risk from drought which leads to vulnerability of supply. The rehabilitated/new schemes will support water to all households for domestic use. • The participation of the IPs in water supply scheme rehabilitation/construction will allow additional income for households and new skills. • Income generation will be increased for the IPs, in particular for women. women can expand livelihood. The project will help the income of the family. • Communities will be able to plant and maintain kitchen gardens which will improve food security.	Positive impact on livelihoods and food security through increase reliability of water supply. Project-based income generation to host community
Customary land use to be correctly negotiated in line with community expectations	• The water source is the only sacred place along the water supply scheme and has been considered in the designs and implementation of the construction and respected. • Participatory assessment of all sacred places in pre-construction phase will ensure that the project activities will not impact the sites.	Potential negative impact if customs not followed
Land related (acquisition) and surrounding features	• Agriculture and forestry, houses, public facilities nearby the water supply scheme were identified. Community in the past has cleared the forested areas to engage in horticulture activities in their farmlands/gardens. • Participatory assessment identified the existing farmlands will be affected by the water supply scheme projects but all land owners have consented to the project and to the use of their land in the rehabilitation.	Positive impact - the community and farmers will benefit from access to the water supply system which will enhance standard of living, hygiene, girls enrolment in school and food security.
Environmental impacts		
Waste management	Waste generated such as cement bags during construction, oil from equipment maintenance (used oil), food bags, boxes and cups, drinking water bottles being discarded in the community and nearby sites, pit for the temporary toilet facilities.	Temporary negative impact

Areas	Assessment results	Risk and Impact
Pollution (noise, emission, water)	Noise generated from construction activities such as the mobile plants (concrete mixers, plate compactors and vibrators), vehicles and equipment (such as the excavators, rollers, dump trucks) will be temporary and only during construction.	Temporary negative impact
Pollution (dust and emissions)	Increase in dust generation and spread of dust; Increase in emission of air pollutants from vehicles, plant and equipment, machinery.	Temporary negative impact
Ecology (Flora and fauna)	New flora and weed species introduced; Disturbance of fauna and their habitat	Temporary negative impact
Land – erosion and sedimentation	• Blockages of drains and waterways due to construction activities; Erosion and sedimentation caused by construction works; Borrow pits located near to community and left exposed; • Landslide in the water source might negatively impact the – planting trees to protect the water source. • Community need training on how to protect the water sources – what variety of plants. • Project is implementing biodiversity measures to protect the slope along the alignment and water source from erosion and landslides which will have an overall positive impact.	Temporary negative impact in the short-term; Positive impact in the long-term
Project design and participation		
Participation and consultation	• It is necessary to provide information about the project and progress regularly to the community. • Key decisions related to the project should include community representatives. • If COVID-19 outbreaks intensify again and sanitary fences/State of Emergency declared, this could hinder progress of the project and participation.	Positive impact on ownership and legitimacy of the project
Project monitoring	• Joint monitoring groups consisting of national and municipal level stakeholders and affected communities allow to monitor both technical and socio-economic and cultural aspects of the project. • Independent monitoring and inspection is conducted by ANLA.	Positive impact on transparency and efficiency

A5.14 Measures to eliminate, minimize or mitigate the identified risks

This section presents the planned measures to avoid, minimize, or mitigate the adverse effects mentioned in previous section.

All potential impacts were considered, and the possible measures that can be taken to fully and effectively mitigate any arising unforeseen impacts identified. Although there are IPs present in the project area, the impacts are expected to be positive. Based on the consultations conducted, there is broad community support for the water supply scheme projects.

It was also agreed that whenever there will be unanticipated impact in the future, the Suco Council Members along with the traditional cultural leaders will discuss the matter and come up with a plan of action and solutions as detailed below on FPIC procedures, and Action Plan of this IPP. Should IPs have concerns and feedback, the GRM process and communication plan detailed below will be used.

Table A8- 3: Measures to eliminate, minimize or mitigate the identified risks

Issues discussed	Measures	Responsible persons	Tools/forms/templates to be used
Land	• Engage and involve the local authorities, affected community members, IP community and representatives during the field surveys and technical assessment and consultations and get consensus on the scope and scale of the rehabilitation works. • Ensure that the local leaders and IP community are fully aware that the rehabilitation works will be following along the existing water supply alignment and confirm agreement on alignment for new schemes. • No relocation, resettlement, or removal of indigenous population from their lands will take place as a result of the implementation of the infrastructure project. • Engage IP community and their representative and ensure that sufficient understanding of the project scope and the issues in well informed and consensus is reached. • Obtain consent and agreement from IP and formal declaration for IP representatives.	MSA, SSE, FC Local Contractor	• Meeting Minutes, Regular Reports – Monitoring
Employment during the Construction	• Number of people in the local community that is actively engaged/employed on the construction project. • At least 50% of the contractor's labour force/workers from local community (of which 40% women)	FC, Engineer, Contractor	• Contractors Method Statement, • Employment Contracts • M&E framework for the project
Natural Resources	• No natural resource extraction such as quarrying, and or construction material extraction for distribution pipeline laying occurs on the lands/territories that belong to IPs.	Field Coordinator, Climate Change & Environment Officer Municipal Focal Point/PDIM Engineers MSA, ANLA, SSE Local Contractor	• Contractors Method Statement

Issues discussed	Measures	Responsible persons	Tools/forms/templates to be used
	• Ensure that catchment management interventions such as soil-bioengineering and agroforestry interventions do not introduce weed and/or invasive alien species or trees/plants. • Ensure thorough consultation with IP community for agroforestry and bioengineering measures • Conduct prior assessment on the species of trees and plants to be used of the catchment rehabilitation measures. • No invasive alien species (IAS) of trees/plants will be used for the soil bioengineering applications and reforestation activities. • No non-native species will be used/or new species of trees introduced in the site without prior assessment.	PMU, Agroforestry Specialist MAF, Extensionist	• Catchment Management Plan • Soil Bioengineering Approaches • Agroforestry Strategy
Construction materials	• Seek to reuse materials from earthworks within footprint of the project site. • Quarry materials to be sourced from approved/authorised quarries. • Local suppliers of materials to be preferentially sought.		
Waste management	• Waste to adopt hierarchy. • Waste to be managed according to measures outlined in ESMP, including disposal at approved facilities		
Pollution (noise, dust, water)	• As per ESMP		
Culture and Heritage	• No removal, confiscation or damage is caused to cultural heritage site, objects and/or spiritual property from the community and/or IPs.	Field Coordinator, Climate Change & Environment Officer MSA, ANLA, SSE, SSAC, Local Contractor	• Meeting Minutes, Regular Reports – Monitoring
	• Customary regulations and traditional practices of the local community, affected IPs are respected and followed. • The key customary ceremonies incorporated in the project design and SEP and IPP.	Field Coordinator, Climate Change & Environment Officer Communications and M&E Officer MSA, ANLA, SSE, SSAC Local Contractor	• Meeting Minutes, Regular Reports – Monitoring, Project Progress Reports
Customary land use to be correctly negotiated in line with community expectations.	• The customary ritual/ceremony will be done prior to the construction works led by the IPs spiritual leader. • Conduct cultural ceremony at the start and end points of the project: It is a symbolic ceremony to consider the *lulik* (holy) site that is near to the alignment.	Lia nain ANLA environnemental officer Chefe suco Contractor Municipal engineers Field Coordinator CCEO	Activity report – as part of the ANLA environmental inspection

Issues discussed	Measures	Responsible persons	Tools/forms/templates to be used
	• FPIC process was used to identify project activity site and land.		
Participatory Project design – to ensure that livelihoods, cultural activities and O&M plans are culturally appropriate	• FPIC process will be used through participatory assessment and consultation on project design (on preferred communications channels and methods, monitoring activities and frequency, grievance and feedback mechanism conducted and integrated in the IPP).	Municipal and project engineers Field Coordinator CCEO Chefe suco	Participatory assessment tools Consultation meeting and meeting minutes
Grievance and feedback mechanism	• FPIC process will be used to determine and establish the GRM.	GRM structure: Municipal administrator, MoPW representative, PA representatives and suco representatives – youth, women and men and chefe suco, municipal GFP Secretariat is the FC	Grievance Redress Mechanism Structure form (grievance, feedback, complaint form and register) – see ESMP section Annex 6).

Mitigation measures to address the above risks/issues are further detailed in the ESMP tables for preconstruction, construction and operation phases of the project (see Sections 7.2, 7.3 and 7.4). Site-specific mitigation measures will be further elaborated for each individual water supply scheme sub-project, for each of the phases, when the site-specific ESMPs are prepared. In addition, the templates for monitoring the risks in each phase will enable documenting and tracking of how each risk actually manifests during each sub-project phase, the mitigation measures to be taken, responsible personnel, completion of the mitigation action and outcome. The ESMP monitoring template will include a live tracking template that will record the following for each risk in tables in 7.2, 7.3 and 7.4.

Actual risk
• Description of actual risk;
• Actual Risk (Probability, Impact, Risk (colour coded));
• Overall Risk Status (Active/Inactive/Expired/Occurred);
• Risk owner

Risk Management/Mitigation Measures implemented
• Mitigation actions agreed
• Mitigation action owner
• Expected timeframe/duration of mitigation action
• Mitigation action status (% complete)
• Completion Date
• Post-mitigation outcome
• Post-mitigation risk status ((Probability, Impact, Risk (colour coded))

While the positive impacts of each sub-project will be identified and the sub-project designed and implemented to maximize positive benefits, we do not agree to including the positive impacts in Table A4-8. Since the purpose of the ESMP is to identify and mitigate the negative impacts of the sub-projects, the focus will be on the negative impacts.

A5.15 Information Disclosure, Participation, and FPIC process

The design of the water supply project was properly consulted and agreed during several consultations with the community, local authorities, and national and sub-national stakeholders. The information disclosure,

participation and consultation process followed the section 4 of the Standard 6 Guidance Note and implemented a meaningful FPIC processes. This section describes the mechanisms to conduct iterative consultation and consent throughout implementation of the project. The information disclosure, participation and FPIC processes are also in line with the SEP in Annex 2 of this ESMP. It should be noted that no resettlement is required as part of this subproject. The water supply scheme project has been identified as one of the urgent needs for the community.

A5.16 IPs representatives in the subproject

- Chefe suco is the main representative as the administrative and customary leader.
- Chefe aldeias, lia nain, suco council members including youth, women and veterans and the affected communities are active participants in project monitoring, key cultural ceremonies, and regularly
- The project Field Coordinators, Climate Change and Environment Officer along with local authorities are responsible for liaising with communities and for promoting community participation and consultation.
- According to the SEP, national partners – Post Administration, Municipality, line ministries' representatives participate at various stages of the project and have clear functions.

A5.17 Summary of FPIC processes undertaken with the affected peoples'

The FPIC and screening process as described in the ESMF was conducted with due diligence and with active participation from members of the local community to design the project, to identify risks and impacts and mitigation measures. The FPIC processes undertaken and led to the IPs' support for the project are described in this section.
The consultation meetings were organized ensuring:

- **Meetings were conducted in an environment where they do not feel intimidated** – sede suco (suco community center) which is used for community consultations.
- **Where they have sufficient time to discuss in their own language** – meetings were conducted in local language, field coordinators provided information and plan about the meeting in advance to chefe suco who in turn had informed the community members.
- **Meetings are conducted in a culturally appropriate wa**y – meetings were led by chefe suco and national project staff which followed cultural norms in facilitating meetings. For example, it is expected in community meetings to have lunch and food, certain protocols are followed (respects and names are mentioned in detail, to raise questions and agree on topics).
- **Meeting topics included relevant matters affecting the IPs'** rights, lands, natural resources, livelihoods, traditional knowledge and customs and governance systems.
- It was made clear at each stage of the meeting, once the community has given their consent to the project, they can withdraw it at any stage.

The FPIC process:

- **Free:** The IPs representatives have free access to project information and have full freedom to make their own decisions related to their rights and interests, during the project's critical implementation time points.
- **Prior:** The project documents have been provided by the Field Coordinator to chefe suco and council members before the pre-assessment. In addition to the project FPIC process, the national PDIM project planning/identification process was used in the sub-project prioritization/selection process during the overall project selection and prior to the detail technical assessments and designs.
- **Informed Consent:** all the project activities conducted in communities should be decided through process of collective discussion and decision-making.

Table A8- 4: FPIC processes implemented to obtain IPs' consent

FPIC implementation	Steps conducted
Identified IP representatives	Key representatives of the IPs were identified. They include: chefe suco, chefe aldeia, lia nain, members of the suco council and aldeia assembly including youth and women representatives.
Pre-assessment meeting with IP representative	Through desk review and pre-assessment, demographic information was collected. Results were used to design relevant and effective participatory assessment.
Conduct participatory assessment	Through the participatory assessment geographic information related to the project was mapped and documented. Potential positive and negative impacts, views and concerns regarding the project and areas requiring FPIC were identified.
Discussion on identified impacts	Land use, physical impacts (waste, noise and dust), the use of customary laws in project implementation and IPs' participation in project monitoring were documented and reported back to IPs during consultation. Lia nain sets out key project activities that require cultural ceremonies as documented in the IP plan (Annex 5d).
Design project grievance and feedback mechanism	A project GRM set up consultation was conducted.
GRM committee established, and mechanism agreed	GRM Committee and processes were agreed (see Annex 6 for detailed process and minutes).
Communication plan	**Distribution of materials** • Flip charts of the technical assessments with results of the mapping and issues raised are provided to the suco (caricature and drawing) • Brochure about the Project can be distributed • Notice board on the construction site • Sign board with project information • Mobilization meeting – also distribute additional materials: - Booklet/guideline for the climate resilient infrastructure provided to the contractors. - Summary of the guideline distributed for the community
Participatory monitoring agreement	IPs' preferences in monitoring activities were documented and integrated in the project design (see section A5.18) Independent review and monitoring provided by ANLA which uses forms that are nationally and locally relevant and respect and promote the rights of the communities.
Draft letter of declaration	All issues documented. Key agreements listed in the Letter of Declaration. Draft Declaration Letter is shared and read aloud to all representatives. Any feedback received.

Declaration letter signed by IP representative	IPs' needs, conditions and priorities are included in the project design. Consent reached and provided in the form of the signed Declaration Letter
Right to withdrawal	Community's right to withdrawal to parts or whole of the project were reiterated, conditions for withdrawal agreed and process of withdrawal agreed.

Right to withdrawal, conditions for withdrawal and process of withdrawal. The conditions of withdrawal of consent to the sub-project were discussed and agreed as follows and compliance will be ensured before the start of the project:

Cultural ceremony. The project requires that customary regulations and traditional practices of the local community are respected.

Land. It is noted that the project will not require, encourage, or coerce the relocation of IPs, nor will the project impinge on the development goals of IPs and therefore compensation under ES 6 is not required.

However, it has been agreed with the IPs representatives that the IPs have the right to withdraw the consent/agreement and that the agreement would be revisited if the project has impacts on their lands in terms of encroaching sacred places, affecting the community's livelihoods, and resources.

Local employment. All unskilled labour including women and men should be hired from within the local community in the suco.

The mechanism or process for withdrawal includes using the established Grievance Redress Mechanism established with each beneficiary community and other mechanisms convenient for the community at the time (Annex 3 of this ESMP). To ensure IPs' have full access to information throughout the project, project communication and information plan and monitoring plans are also agreed.

The sub-project level ESIA/ESMP including IPP for water supply schemes including IPP was published on UNDP website in February 2023 and will be readjusted (if required) based on consultation and feedback from the stakeholders. If the community at the initial stage of consultation require additional information about the sub-project it will be provided well ahead of the 2nd round of consultation before the written confirmation/verification is obtained.

A5.18 Particular project activities and circumstances requiring FPIC

Extensive consultations, following FPIC processes, with the host community and people potentially impacted by the proposed project were carried out to confirm that sub-project activities would not cause any disruption to people's rights, lands territories, resources, traditional livelihoods, cultural heritage and that no resettlement or relocation IPs would take. The project activities requiring agreement (based on FPIC) identified during the pre-assessment and participatory assessment were:

- Land use (respect for sacred structures, and no encroachment on farmlands)
- Temporary physical (noise, waste and pollution)
- Participatory project design – communications plan, monitoring plan, grievance and feedback mechanism.
- Throughout the entire project, customary laws should be respected.
- Local community should be employed by contractors during construction as unskilled workers.

In line with the GCF's procedures and FPIC process, the following procedures will be adhered to in developing, consulting and disclosing the site-specific IPP for all water supply schemes.

The project proponent, in collaboration with relevant stakeholders and indigenous peoples' organizations and representatives, develops a draft Indigenous People's Plan (IPP) as part of the sub-project preparation. The draft IPP outlines how the project will respect and address the rights, needs, and aspirations of indigenous peoples and is based on detailed consultations with IPs during project initial assessment. Individual schemes consultations will be carried out by Field Coordiantors who speak the local lanaguag, gender sensitive and consersant with local culture. The process will invovle:

- Engage and involve the local authorities, affected community members, IP community and representatives during the field surveys and technical assessment and consultations and get consensus on the scope and scale of the rehabilitation works.
- Ensure that the local leaders and IP community are fully aware that the rehabilitation works will be following along the existing alignment and confirm agreement on alignment for new schemes.
- Ensure that no relocation, resettlement, or removal of indigenous population from their lands will take place as a result of the implementation of the infrastructure project.
- Engage IP community and their representative and ensure that sufficient understanding of the project scope and the issues in well informed manner. Discuss all potential negative and positive impacts and mitigation measures and obtain feedback. Ensure consensus is reached.
- Obtain consent and agreement from IP and formal declaration for IP representatives.

The Community in case need any additional information or advice which the facilitator is not abel to provide, the project team provide such support at a latter mutually agreed date. Before the start of schemes at the social mobilisation session where the whole community, project staff and relevant government official participate, the main contents of the IPP including FPIC process is reconfirmed and any additional questions or concerns are addressed.

A5.19 Beneficial Measures

The infrastructure subproject will provide social and economic benefits, environmental and cultural protection and, based on the ESIA and ESMP that have been developed, is not expected to result in unacceptable adverse or negative impacts to the community during the project implementation period. The negative impacts likely are considered to be minor and of a temporary nature and therefore outweighed by the positive impacts that the project will have.

The opportunity to participate in the water supply scheme rehabilitation/construction works and maintenance works will create employment and income generating opportunities for youths, women and the local community through direct engagement in construction and or revegetation activities or via indirect activities such as provision of ancillary services and support.

It is noted that both UNDP and GCF emphasize the importance of ensuring social and environmental sustainability of the water supply scheme sub-projects and encourages the consideration of local community needs, priorities, and benefits in project design and implementation. The individual water supply sub-projects will therefore consider and incorporate elements of benefit sharing within the broader social management and community engagement components of the ESMP to help to address the social and economic dimensions of each irrigation scheme and promote positive outcomes for affected communities.

In line with UNDP SES Standard 6, appropriate benefits, will consider the potential positive social impacts and benefits of the scheme on local communities. This will include conducting stakeholder consultations, assessing local needs and priorities, and integrating appropriate measures to promote benefit sharing. These measures will be included within the social management framework of the sub-project ESMP to ensure that social and economic dimensions are adequately addressed. It is important to note that the specific details of the benefit sharing will depend on the context, local conditions, and stakeholder dynamics of each individual water supply scheme. Consulting with local communities, experts, and relevant

stakeholders throughout the process will help ensure the plan's relevance and effectiveness

A5.20 Grievance and Redress Mechanism (GRM)

The project supported the establishment of a GRM that is culturally and socially acceptable and appropriate to the community and Municipality as mentioned in Section 7.10 and Annex 3. The GRM was developed with IPs following FPIC processes. The establishment of the grievance redress Mechanism (GRM) is crucial in facilitating the resolution of any issues and concern that is related to the implementation of this sub-project.
The key relevance of IP issues for this project are related to:

- Development of an appropriate GRM which considers local conflict resolution mechanisms
- Consultations and stakeholder engagement that are detailed and respect clan and family relationships
- Participatory Project design – to ensure that livelihoods, cultural activities and O&M plans are culturally appropriate and do not adversely impact IPs
- If use of customary land required, that it be correctly negotiated in line with community expectations.

Table A8- 5: Targets for the GRM structure

Activity	Responsible	Tools/ forms
Grievance Redress Mechanisms is readily accessible and tailored to the needs of the local/indigenous communities	Field Coordinator, Climate Change & Environment Officers MSA Municipality	• GRM Minutes of Meeting, TOR • GRM Register
Capacity building and awareness activities for local/community and indigenous peoples to report grievances issues and concerns. Information on the GRM posted on Notice Board on the site. Community aware of the GRM and how to report issues and concerns.	Field Coordinator, Climate Change & Environment Officer Communication Officer MSA, ANLA, SSE	• Stakeholder Engagement Plan • Training and Awareness Plan

Please refer to Section 7.10: Grievance Redress Mechanism (GRM) (pages 153-1158) and Annex 3 (pages 180-182) where GRM for the project including IPP has been elaborated.

A5.21 Capacity Building

Project staff and experts will be trained on how to engage with IPs and how to support the effective implementation of the IPP throughout the project's life cycle.

IPs and other members of the community who will be involved in various phases of the project will be trained of appropriate skills needed to effectively perform their expected roles. The activities/sessions should also serve as a mechanism to build awareness and capacity of the local community/indigenous beneficiaries to identify and address issues affecting them. A training Needs Assessment (TNA) will be used as the basis in the developing the most appropriate trainings and awareness activities.

Table A8- 6: Capacity Building Plan

Activity	Responsible	Tools / forms
Project staff and experts trained on how to engage with IPs and how to support the effective implementation of the IPP throughout the project's life cycle.	Field Coordinator, Climate Change & Environment Officer Municipal Focal Point/PDIM Engineers – Technical Assessment MSA, ANLA, SSE Local Contractor	• Training and Awareness/Capacity Building Plan • Training reports
Adequate information about the project provided to the host community – at least 10% of beneficiaries know about the Project. IPs and other members of the community trained in skills needed to perform effectively their expected roles on the project.	Field Coordinator, Climate Change & Environment Officers Municipal Focal Point/PDIM Communication Officer MSA	• Stakeholder Engagement Plan • Training and Awareness Plan/ Capacity building plan • Communication Plans • Training report
Training provided to construction workers, and the customary regulations and traditional practices of the local community are fully respected.	Local Authorities, PMU, Contractor and Workers Field Coordinator, Climate Change & Environment Officer	• Stakeholder Engagement Plan • Capacity building plan • Training report
Training about how to control the quality of the project so they can contribute to long-term sustainability of the project.	MoPW, ANLA, SSE Local Contractor	• Capacity building plan • Training report

A5.22 Monitoring, Reporting and Evaluation

The implementation of the IPP will be monitored to:

i. ensure that mitigation measures designed to manage any negative social impacts and measures to enhance positive impacts are adequate and effective,
ii. determine if the indigenous communities have any issues or concerns regarding project implementation, and that they have access to the right channels to register and address their concerns and/or complaints
iii. propose corrective actions when needed during the implementation

The monitoring will be participatory and implemented with the IP representatives, government officials and project team. A system will be established to monitor whether implementation of and compliance with the IPP – as described in Annex 5c.

The responsible IP focal point for monitoring– in this case the suco chefe will ensure that representatives from the IPs, women, youth, and persons with disabilities participate in the monitoring. In addition, lian nain, veteran and aldeia chefes will be part of the monitoring group.

All M&E documentations are to be widely consulted and confirmed by representatives from the IPs/community who were involved in the process.

Implementation of the IPP will be reported on a weekly basis from Field Coordinators. Monthly joint monitoring meetings will be held with the IPs to discuss progress and milestones, any issues related to the project.

A5.23 Budget and financing

Table A8- 7: Sub-project IPP implementation budget

No	Description of Activity	Unit	Qty	USD
1	Community Consultation with IPs/community– introduction of the project and appraisal	No.	1	120.00
2	Participatory Assessments with stakeholders	No.	1	300.00
3	Implementation of Communication Plan including signboards, noticeboards, translation and distribution of materials, brochures, meetings	L.Sum		750.00
4	Participatory screening with IPs and key stakeholders including ANLA staff	No.	2	350.00
5	Establishment of the GRM (budget covered in the GRM Establishment as per Annex 6)	No.	1	550.00
6	Training of the selected contractor on the IPP	No.	1	100.00
7	Orientation training for workers from IP community and contractor's staff	No.	1	300.00
8	Official launching of the project prior to mobilization and commencement of the construction works	No	1	650.00
9	Official commissioning of the project after completion and hand-over of the construction works	No	1	1150.00
10	Cultural ceremony to seek permission from ancestral spirits before commencement of the construction works (*budget provided in the BOQ contractor's unit rates/overhea*ds)	No.	2	--
11	Monthly construction site meetings during construction period	No	4	200.00
12	Environmental Inspections/Monitoring by National Agency for Environmental Licensing (ANLA) during construction	No	2	350.00
	Total:			**4,820.00**

Annex 5a: Checklist applied for appraising whether FPIC process likely to be required

Project Code:

Questions	Yes/No
Will the activity involve the relocation/resettlement/removal of an indigenous population from their lands?	No
Will the activity involve the taking, confiscation, removal or damage of cultural, intellectual, religious and/or spiritual property from indigenous peoples?	No
Will the activity adopt or implement any legislative or administrative measures that will affect the rights, lands, territories and/or resources of indigenous peoples (e.g., in connection with the development, utilization or exploitation of mineral, water or other resources; land reform; legal reforms that may discriminate de jure or de facto against indigenous peoples, etc.)?	No
Will the activity involve natural resource extraction such as logging or mining or agricultural development on the lands/territories of indigenous peoples?	No
Will the activity involve any decisions that will affect the status of indigenous peoples' rights to their lands/territories, resources or livelihoods?	No
Will the activity involve the accessing of traditional knowledge, innovations and practices of indigenous and local communities?	Yes
Will the activity affect indigenous peoples' political, legal, economic, social, or cultural institutions and/or practices?	No
Will the activity involve making commercial use of natural and/or cultural resources on lands subject to traditional ownership and/or under customary use by indigenous peoples?	No
Will the activity involve decisions regarding benefit-sharing arrangements, when benefits are derived from the lands/territories/resources of indigenous peoples (e.g., natural resource management or extractive industries)?	No
Will the activity have an impact on the continuance of the relationship of the indigenous peoples with their land or their culture?	No

Name: National Field Coordinator

Date:

Annex 5b: IPP form for data collection

Interview with:		
Location:		Date:
Participants:		Project ID:
Questions	**Sub-questions**	**Answers**
Data statistics at the suco	- Data system in the suco	-
Land tenure	- Background of land use in the suco	-
	- Project land dispute regarding the project	
	- Previous experience in resolving land dispute	
Land dispute resolution	- How to resolve issues related to land?	-
Women and men labour division in the suco	- Were the communities involved?	-
What are their experience dealing with rural road or irrigation in the past?	- Were women involved?	
	- If yes/no, how and why?	
Gender knowledge training	- Opinion and experience about gender equality	-
Climate change and disaster	- Vulnerable groups, women affected	-
	- Suco's initiatives to	
	-	
Women's groups	- Women's group in the suco	-
	- Key challenges faced	
	- Who are the vulnerable groups?	-

What are the advantages for vulnerable groups?	- How will this project affect this group?	
Involvement of men and women's in construction and implementation of the irrigation?	- What kind of constraints do men and women face in participating?	-
	- How can we ensure gender equality during construction of irrigation?	
Water management/user group	- Does it exist already (traditional)? How can this be implemented if the Project is implemented?	-
	- Does the water management group need training?	
Training needs of the suco council	- In terms of PNDS and PDIM	-
	- In terms of gender training	
	- In terms of irrigation rehabilitation project	
Communication and information needs regarding the project	- Information needs	-
Monitoring and feedback mechanisms of the project	- How can you/we ensure men and women's participation	-
Other concerns	- Project start	-

Annex 5c: Action plan for the Indigenous Peoples Plan (Water Supply Scheme E_WS-01)[27]

Project ID:	
Project Name:	
Project Location	
Type of infrastructure:	
Expected duration of the project:	

The project specific IPP consists of a mix of assessments, training, consultations, cultural ceremonies and monitoring processes. The IPP is aligned with the project cycle ensuring all project lifecycle incorporates FPIC principles.

#	Activities	Description	Timeframe	Implementing Parties	Tools / methods
I	**Project design and preparation stage**				
1.1	**Community consultation** • Suco council members (female, youth, lia nain), PA representatives, veterans, community/beneficiaries	• Explain and introduce the Project, parties involved and responsible • Inform about the budget/funding arrangements • Discussion appraisal	Q1-2022	GCF/UNDP Engineers PDIM Engineers MoPW Engineers Field coordinator to support	• Concept note • Community consultation agenda • Meeting minute
1.2	**Participatory assessments** to understand and document the socio-demographics, and the historical, political, and cultural dynamics of the area	• Document geographic and demographic information gathered through participatory mapping of the land (GIS) – walking with the community along the IS alignment and record coordinates of the landmarks, assets, livelihood areas and sacred sites. • Community measures the width etc. together with the engineers – route has been agreed with the community and no land acquisition is required. • Engineers and design team use FPIC checklist during the assessments. • Community group discussion guided by the questionnaires is conducted through participatory methods involving communities – all information (including	Q4 2022	GCF/UNDP Engineers PDIM Engineers MoPW Engineers CCEOs FC Municipality representatives	• Questionnaire for the development of environmental project document of IS rehabilitation • Site identification tool (technical and environmental) • GPS coordinates on Google map – kml file

[27] Annex 5b is the Action Plan for a completed water supply project for which the FPIC process was completed (E-WS-01). Similar site-specific Action plans will be prepared for each sub-project once the site-specific FPIC is completed.

#	Activities	Description	Timeframe	Implementing Parties	Tools / methods
		sacred lands) is provided by the community. This serves the basis for identifying community priorities and needs. • Open comments on the Project – by representatives of all groups – men and women and youth.			
1.3	Discuss and agree on the **participatory communication plan** and carry out iterative discussions through which project information will be disclosed in a transparent way.	• Key milestones of the Project discussed and informed including mobilization meeting, participatory screening date • Project progress monthly meeting structure and format discussed. • Key communication frequency and materials discussed and added to the ESMP and IPP.	Q4 2022	M&E officer	• Distribution materials in Tetum • Sign boards • Monthly meetings
1.4	**Participatory screening** by ANLA and IPs– verify the mitigation plans	• Opportunity for the community to raise any additional concerns, information and views. • Apply the national screening checklist for project categorization including adherence to customary laws. • Based on additional verification, update the ESMP if necessary.	Q3 2022	ANLA	ANLA licensing screening Project document
1.5	Establish **Grievance Redress Mechanism Structure** at the suco level	• Agree on a feedback and complaints mechanism • GRM Structure established • GRM mandate meets the FPIC criteria – targeting, implementation, impact, to improve efficiency and effectiveness of the project	Q2 2023	GRM structure: Municipal administrator, MoPW representative, PA representatives and suco representatives – youth, women and men and chefe suco, municipal GFP Secretariat is the FC	Grievance Redress Mechanism Structure form (grievance, feedback, complaint form and register) – see ESMP section Annex 6). ToR for the GRM Committee
1.6	Informing and consultation on the results of **the participatory assessments**, communication plan and GRM structures–	• During participatory meeting validate information and inform the community participants before the consent • Any changes and suggestions documented and integrated to the plan.	Q1 2023	Chefe suco and community	• Meeting minute • Project document for ANLA licensing • Project ESMP

#	Activities	Description	Timeframe	Implementing Parties	Tools / methods
	length, width and depth of the water supply are demonstrated.				
1.7	Community participants vote and participatory consultation and assessment results are documented in the Declaration Letter.	• Document Indigenous Peoples' needs that are to be included into the Declaration Letter • Make any changes based on the consultation and review • Seeking to use available materials within the vicinity of the project site and municipality prior to moving to further areas	Q2-Q3 2023	Chefe suco and community	Draft Declaration Letter
1.8	Obtaining consent	• Through community meeting reach consent	Q2-Q3 2023	Chefe suco and Post Administrator and IPs	Signed Letter of Declaration from IP representatives
1.9	Preparation of engineering designs, BOQ and technical specifications	• Design takes into account the community's priorities and concerns expressed during consultations	Q3 2022	Engineers , CTA and Local Contractor	Technical specifications form
II	**Procurement and contracts stage**				
2.1	Conduct contractor training on customary regulations and traditional practices of the local community are fully respected (as part of the social and environmental safeguard training)	• Contractors understand the local customary regulations and traditional practices	Q3- Q4 2023	Project team Training expert	Social and environmental safeguard training
2.2	Contractor's method statement (prior to mobilization and the construction work)	• Contractors agree to follow the FPIC process including GRM in their construction activities	Q3 2023	Procurement team	Contractor method statement
2.3	Labour recruitment from the community members to participate in the project (of workers)	• Chefe suco identified workers to participate in the construction • Contractor to make agreements with community workers • Orientation training of the local workers	Q3 2023	Chefe suco Contractor	Contractor's worker agreement
2.4	Launching of the project and mobilization meeting	• Participatory meeting introducing the contractor to the wider IPs community and stakeholders	Q3-Q4 2023	PMU Contractor Field coordinator	Concept note (including agenda) Meeting minute

#	Activities	Description	Timeframe	Implementing Parties	Tools / methods
		• Consultation – additional comments/feedback/…		PA, municipal and suco representatives	
III	**Project implementation stage**				
3.1	Hold cultural ceremony to ask permission (ancestral spirits) before the project starts	• Cultural aspects are respected suco owner's permission is allowed	Q3-Q4 2023	Lia nain ANLA environmental officer Chefe suco Contractor Municipal engineers Field Coordinator CCEO	Activity report – as part of the ANLA environmental inspection
3.2	Monthly project meeting during implementation	• Discuss and hear opinion of the community on the progress including any social issues arising, complaints on payments, implementation	Q3-Q4 2023	Engineers – GCF, Municipality, MSA Chefe suco Contractor	Meeting agenda and minute
IV	**Project operations and maintenance and closing stage**				
4.1	Establish community maintenance group and link with MSA	• Community maintenance group established • Develop an operations and maintenance plan (including plans to sustain efficient, equitable and sustainable water use)	Q4 2023	MSA	Operations and maintenance plan
4.2	Cultural gratitude ceremony for the ancestral spirits for granting permission and smooth implementation	• At the end of the project implementation and before hand over, cultural ceremony performed by lia nain	Q4 2023	**Lia nain** Chefe suco Contractor IPs	Concept note to organize the ceremony
4.3	Hand-over /commissioning ceremony – Follow traditional suco ceremony customs (exchanging tais, group Prayer, cultural dance, food)	• Community and MSA receives the rehabilitated project	Q4 2023	MSA and SSE **Chefe suco** **Lia nain** **Contractor** PA and Municipal Administrator Field coordinator PMU	Master of Ceremony from the suco will guide all ceremony process to follow traditional customs
V	**Project monitoring**				

#	Activities	Description	Timeframe	Implementing Parties	Tools / methods
5.1	Conduct participatory monitoring and evaluation of the IPP	During monthly meetings, conduct progress checks with respective stakeholders and representatives of the IPs	Q3-Q4 2023	M&E officer Chefe suco Representatives of Suco council	Progress reports
5.2	Environmental inspection during construction	• Ensure social and environmental guidelines are adhered by the contractor, including proper FPIC processes • Waste generation, land, pollution	Q3-Q4 2023	ANLA environmental officer, Contractor Chefe suco Municipal engineers Field Coordinator CCEO	Environmental licensing Law Environmental Project Document IPP
5.3	Documenting lessons learned	• Conducting bilateral meetings (individual interviews) on project implementation from IPs and responsible parties • Documentation of lessons learned and dissemination during technical sub-Steering committee, Municipal Coordination Meetings, internal Project meetings with PMU staff.	Q4 2023	M&E officer Field Coordinator	Final consultation meeting Individual interviews with stakeholders and IPs Documentation brief

Annex 5d: Monitoring Indicators –

Activity	Target	Responsibility	Tools/Methods
Stakeholders Engagement	Local authorities and customary leaders actively participate in identifying and addressing issues and concerns of the community and IPs. At least 2 such consultation meetings held with local authorities and community.	Field Coordinator Municipal Focal Point/PDIM Engineers - Technical Assessment ANLA, SSE	• Stakeholder Engagement Plan • Checklist applied for appraising whether FPIC process required • Project Document • Consultation/debriefing meeting
	Community engagement facilitated by someone who speaks the local languages and is aware of the project context and is culturally and gender sensitive.	Field Coordinator Municipal Focal Point/PDIM Engineers - Technical Assessment	• Stakeholder Engagement Plan • Consultation/debriefing meeting
Capacity Building and Awareness	Project staff and experts trained on how to engage with IPs and how to support the effective implementation of the IPP throughout the project's life cycle.	Field Coordinator, CCEO, Municipal Focal Point/PDIM Engineers - Technical Assessment MSA, ANLA, SSE, Local Contractor	• Training and Awareness Plan • Training reports
	Adequate information about the project provided to the IPs – at least 10% of beneficiaries know about the project. IPs and other members of the community trained of appropriate skills needed to perform effectively their expected roles on the project.	Field Coordinator, CCEO, Municipal Focal Point/PDIM, Communication Officer, MSA	• Stakeholder Engagement Plan • Training and Awareness Plan • Communication Strategy • Training report
	Training provided to construction workers, customary regulations and traditional practices of the local community are fully respected.	Local Authorities, PMU, Contractor Field Coordinator, CCEO	• Stakeholder Engagement Plan • Training and Awareness Plan • Training report
GRM Structure	Grievance Redress Mechanisms is readily accessible and tailored to the needs of the local/indigenous communities	Field Coordinator, CCEO, MSA Municipality	• GRM Minutes of Meeting, TOR • GRM Register
	Capacity building and awareness activities for local/community and indigenous peoples to report grievances issues and concerns. Information on the GRM posted on Notice Board on the site Community aware of the GRM and how to report issues and concerns,	Field Coordinator, CCEO, Communication Officer MSA, ANLA, SSE	• Stakeholder Engagement Plan • Training and Awareness Plan

Activity	Target	Responsibility	Tools/Methods
Employment during the Construction	Number of people in the local community that is actively engaged/employed in the construction project. At least 50% of the contractor's labour force from local community.	FC, Engineer, Contractor	• Contractors Method Statement, • Employment Contracts • M&E framework for the project
Natural Resources	No natural resource extraction such as quarrying, material extraction for IS channel construction occurs on the lands/territories that belong to indigenous peoples. FPIC process if the contractor requires resource extraction.	Field Coordinator, CCEO, Municipal Focal Point/PDIM Engineers, MSA, ANLA, SSE, Local Contractor	• Contractors Method Statement
	The catchment management interventions such as soil-bioengineering and agroforestry interventions do not introduce weed and/or invasive species.	PMU, Agroforestry Specialist MAF, Extensionist	• Catchment Management Plan • Soil Bioengineering Approaches • Agroforestry Strategy
Land	No relocation, resettlement, or removal of indigenous population from their lands will take place as a result of the implementation of the infrastructure project. 0 IP affected by relocation, resettlement or removal of indigenous population from their lands.	MSA, SSE, FC, Local Contractor	• Meeting Minutes, Regular Reports – Monitoring
Culture and Heritage	No removal, confiscation or damage is caused to cultural heritage site, objects and/or spiritual property from the community and/or IPs.	Field Coordinator, CCEO MSA, ANLA, SSE, SSAC Local Contractor	• Meeting Minutes, Regular Reports – Monitoring
	Customary regulations and traditional practices of the local community, affected IPs are respected. 2 cultural ceremonies and 2 official ceremonies implemented throughout the project lifespan.	Field Coordinator, CCEO Communications and M&E Officer MSA, ANLA, SSE, SSAC Local Contractor	• Meeting Minutes, Regular Reports – Monitoring, Project Progress Reports
Monitoring & Evaluation	At least 5 people (and/or representatives of the suco council) selected/participated as local community representatives to in project monitoring. At least 4 monthly meetings conducted with IPs to discuss progress of the project and get feedback.	Field Coordinator, CCEO MSA.	• Quarterly Reports

Annex 5e: IPP Institutional Arrangement in Timor-Leste

Matrix below is the established institutional arrangement in engaging with IPs and are relevant in implementing an IPP in Timor-Leste.

Stakeholder	Description
Secretary of State for Arts and Culture	- Lead the government agency on policy, legislation in relation to art and cultural heritage in Timor-Leste - Lead the execution of all project and activities related to art and cultural heritage in each village in Timor-Leste - Lead the implementation of *tara bandu* as one of customary law implemented in the communities.
The Ministry of Tourism, Trade and Industry	- elaborate the policy and regulations for the conservation, protection and preservation of the historical-cultural heritage. - propose policies for the definition and development of arts and culture
General Directorate of Arts and Culture, Ministry of Higher Institution, Science and Culture (based on Organic Law No. 2/2019, March 5th	- ensure an adequate and efficient internal structure to ensure the implementation of policies and programs in the area of art and culture through the coordination and execution of policies defined in the context of the preservation of cultural heritage, the protection of copyright and the promotion and support of cultural activities and the management of museums and libraries, providing the possibility of developing cultural activities aimed at the knowledge and dissemination of the historical, anthropological, archaeological and musicological heritage of Timor-Leste
Secretary of State for the Environment (SSE)	- implementation of climate change mitigation in the community as well implementing *tara bandu* activities with the community
Ministry of State Administration (MSA)	- Local development PDIM and PNDS fiscal planning frameworks - Planning, budgeting and implementation of infrastructure and rural development programs
Municipal Authorities and local authorities	- Authorize Suco for the implementation of *tara bandu* as a customary law that is also involve and respect the right of indigenous people

Stakeholder	Description
Secretary of State for Land and Property, Ministry of Justice	- Regulate status of land ownerships, community land, private land including Indigenous Peoples heritage - Regulation of right of indigenous cultural and tradition and activities, the right of using cultural symbols, identities etc.
Ministry of Agriculture and Fisheries (MAF)	- Regulate the implementation of national park, protected areas - Regulate natural forest use for livelihood and use as source of economic income

Annex 6 – Chance Find Procedure

A6.1 Project Description

This chance find procedure (CFP) has been prepared for all water supply scheme sub-projects for the GCF Project FP109 Safeguarding Rural Communities and their Physical Assets from Climate Induced Disasters in Timor-Leste.

A6.2 Purpose of the chance find procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown cultural, heritage resources, particularly archaeological resources, are encountered during project construction or operation. If such cultural and heritage resources are found during the construction works, then the works should cease and local authorities, national agencies and experts should be contacted immediately and directly for site inspection.

A Chance Find Procedure, as described in UNDP's SES Standard 4 on Cultural Heritage recognizes the importance of cultural heritage for present and future generations and provides guidance to ensure that Cultural Heritage is preserved, protected, and promoted in project activities in a manner consistent with national legal instruments and in alignment. The procedure sets out the steps to be taken to prevent chance finds from being disturbed until an assessment by the responsible authorities and/or competent specialist is made and actions consistent with the requirements are implemented.

The Decree Law No. 33/2017 of 6 September on Cultural Heritage of Timor-Leste provides the guiding legal framework on cultural heritage sites and items.

A6.3 Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. The procedure outlines the roles and responsibilities and the response times required by local authorities, project staff, and the relevant national cultural and heritage authority.

A6.4 National Laws and Policies on Cultural Heritage in Timor-Leste

1. Decree Law No. 33/2017 of 6 September, on Cultural Heritage of Timor-Leste, to create condition for inventorying, preserving, protection and valuing the Timorese cultural heritage. It also highlights the citizen responsibility in guaranteeing the cultural diversity, contributing to the protection and dissemination in many sorts of cultural heritage.

2. Government Resolutions No. 30/2014 of 14 October, on the establishment of National Cultural Day to support the policy on the promotion of Diversity of Cultural Expressions, Timor-Leste has established National Day of Culture on October 14, to dignify Timorese cultural diversity expressions, public awareness, and pay tribute to all who have dedicated themselves in practical artist activities and cultures and enhanced the importance of the country's sustainable development. On this national day, the government organizes cultural festivals that mobilizes all artists from different modalities within the national territory to participate in various programs and competitions, such as (a) traditional dances, traditional music, traditional fashion shows, paintings, poetry, and lectures; (b) shows and appreciation of artist modality from municipalities; (c) seminars on the theme of culture with the aim to empower participant awareness on the importance of protection, preservation, valorization, and promotion of

Timor-Leste's cultural heritage; and (d) exhibition programs where cultural professionals can show and sell their cultural products.

3. Government Resolution No. 12/2012 of 14 May; on the establishment of National Academy of Arts and Creative Industry as a measure to establish the National Academy of Arts and Creative Industry. The academy will be the center of educating craft and arts in traditional form, including the contemporaneous arts, as well as music, dance, and visual arts. The Academy will address a department, which will conduct research in cultural area, providing the study on traditional arts to strength the knowledge of cultural diversifications based on the concept of the modern era.
4. Government Resolution No. 25/2011 of 14 September, on the Protection of Cultural Heritage; to affirm that through culture, Timor-Leste should position itself in preserving, enriching, and safeguarding its identity, and the protection of culture, ensures the continuity and transmission over generations, the historical and ethnographic legacy of our ancestors and achievements and contemporary values.

5. In 2009 the Government signed the Resolution 24/2009 approving the National Cultural Policy (Política da Cultura Nacional, Pt.3). This was the first formal and official document that established a conceptual political framework regarding the definition and protection of National Culture and Heritage

The objective of the cultural heritage policy are knowledge, protection and valorization of material sites and goods and intangible values of relevant cultural interest, as well as their respective contexts.

A6.5 National Administration and Institutions

The Minister of Higher Education, Science and Culture has overall responsibility for cultural heritage. The following services and bodies are dependent on the Minister of Higher Education, Science and Culture: Implementation Unit of the Academy of Arts, Culture and Cultural Creative Industries; Monitoring Committee of the Academy of Arts, Culture and Cultural Creative Industries; National Library of Timor-Leste; National Museum of Timor-Leste, UNESCO National Commission.
The Secretary of State for Art and Culture assists the Ministry of Higher Education, Science and Culture in the performance of these functions.

Timor-Leste has been a member of UNESCO since 2003, and since 2004 a UNESCO Country Office has been based in Dili. The National East Timorese Commission for UNESCO (KNTLU) was established in 2009 and all the projects have been coordinated together with the Secretary of State for Arts and Culture (SEAC) which has shifted between the Ministries of Education (4th, 7th, 8th legislatures) and Ministry of Tourism (under the 5th and 6th).

A6.6 UNDP's Social and Environmental Standards (SES)

UNDP's SES, and Project Level Standard 4: Cultural Heritage provides guidance to ensure that Cultural Heritage is preserved, protected and promoted in project activities in a manner consistent with national legal instruments and in alignment with UNESCO Cultural Heritage conventions or any other international legal instruments that might have a bearing on the use of Cultural Heritage.
As a requirement to safeguard and preserve Cultural Heritage, this is one of the , UNDP projects ensure that chance find procedures are included in all plans and contracts regarding project-related construction, including excavations, demolitions, movement of earth, flooding, or other changes in the physical environment; such procedures establish how chance finds of tangible Cultural Heritage shall be managed, including notification of relevant authorities and stakeholders, avoidance of further disturbance or damage, protection, documentation and assessment of found objects by relevant experts.

A6.7 Induction/Training

All project staff involved in the construction implementation stage of the project such as the project supervisory engineer, construction manager, site engineers, site supervisors, construction coaches and foreman will be briefed about the procedure to be followed if any item or material of cultural and heritage significance is discovered.
All the personnel of the local contracting company, especially those working on the construction site and in particular those that are to be involved in site clearance, earth movements and excavation works are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and this shall also be discussed with the contractor and his key personnel during the regular (monthly) construction site meetings.

A6.8 Chance Find Procedure

If any person discovers a physical cultural or heritage resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction works, the following steps shall be taken:

1. Immediately cease and stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained
2. Immediately notify a foreman or site supervisor. The foreman or site supervisor will then immediately notify the Project Engineer and the Field Coordinator/Environmental Officer.
3. The Project Engineer and the Field Coordinator/Environmental Officer will record all the details in a Site Incident Report (as per Annex A) and take photos and GPS/geo-reference points of the discovery.
4. The Project Engineer and the Field Coordinator/Environmental Officer will immediately notify the relevant local and municipal authorities (such as the Chefe Suco, Administrative Post Administrator, Municipal Administrator). This is in keeping with the provision of Article 6 of Decree Law No. 33/2017 which outlines the obligations of the State and local government to preserve, defend and enhance the cultural heritage of the Timorese people in their area of jurisdiction, in accordance with their legislation. Hence, the project team will first notify the relevant local authorities.
5. Under the direction of the Municipal Authority and project engineer, the contractor will demarcate and secure the site to prevent any disturbance, damage or loss of movable material heritage or removable objects.
6. The Project Engineer and Environment Officer submit the Site Incident Report (Annex A) to the National Project Director and National Project Manager.
7. The National Project Director and National Project Manager notify the Heritage Team which is followed-up in writing.
8. The Heritage Team shall organize and mobilize the archaeologist to conduct a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find.
9. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing minimum disruption and delay to the work schedule of the Contractor. The results of all archaeological work must be reported to the relevant Government body and/or the Advisory Committee on Cultural Heritage, once completed.
10. In case of significant find the Secretary of State for Arts and Culture and the Ministry of Higher Education, Science and Culture team (hereinafter referred to as the Heritage Team) should be informed immediately and followed-up in writing.
11. Written notification of the cultural heritage site encountered during the construction works will come from the contracting authority (which in this case is the Viqueque Municipal Administration) and

provide the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.

12. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage
13. Construction works could resume only after permission is granted from the responsible authorities.
14. In case there is no response to the notification of the find and/or should no consideration or action be taken by the responsible authorities on the notification within 30 days from the date the find was discovered, and works were suspended, this shall be considered as an authorization to proceed with the suspended sections of the construction works.
15. The contracting authority (Viqueque Municipality) shall then provide a written order to the contractor to proceed with the works.

A6.9 Reports and Record keeping

One of the main requirements of the procedure is thorough record keeping. In keeping with the requirements of the procedures outline herein, all finds must be registered with maps, geo-referencing, photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, and the implementation reports kept.

A6.10 Additional information

Specific Articles of Decree Law No. 33/2017

CHAPTER V Protection of Cultural Heritage
Article 15 Cultural heritage and its categories
The cultural heritage encompasses the categories of immovable material heritage, movable material heritage and intangible heritage.

The property heritage, comprising the architectural heritage, the archaeological heritage and the landscape heritage with cultural value, can belong to the categories of monument, set or site.

Movable material heritage may belong to the categories of a single cultural object or object integrated into elements of immovable material heritage.

Intangible heritage may belong to one of the categories defined in Article 40(2), established in accordance with the UNESCO Convention for the Safeguarding of Intangible Cultural Heritage of 2003.

The existence of the categories and designations referred to in this Article shall be without prejudice to the possible relevance of others, in particular where it is provided for in international law.

Article 16 Classification of material heritage according to interest
The property and mobile heritage may be classified as of national interest or local interest.

For immovable property heritage classified as of national interest, whether monument, set or site, the designation of *'national monument'* shall be adopted.

For movable property classified as in the national interest, the designation of '*national treasure'* shall be adopted.

Article 17 Property assets of national and local interest
A heritage asset is considered to be of national interest when its protection and valorization, in whole or in part, represents a cultural value of meaning to the nation.
Property assets whose protection and recovery, in whole or in part, is considered to be of a cultural value

of predominant significance for a given district, subdistrict or juice.
The immovable cultural goods included in the list of world heritage are included, for all its purposes and in its category, the list of property elements classified as in the national interest.

Article 18 Forms of protection of cultural assets and values.
The legal protection of cultural assets and values is based on inventory and classification.
Each form of protection shall give way to the corresponding level of registration and there is:

a. the inventory-asset record
b. the patrimonial registration of classification

The application of precautionary measures provided for by law does not depend on the prior classification or inventory of a cultural good.

Article 19 General criteria for assessment
For inventory and classification, in any of the categories referred to in Article 15, one or more shall be considered in more of the following criteria:

a. the matrix character of the asset element
b. the genius of the respective creator
c. the interest of the heritage element as a testimony symbolic or religious
d. the interest of the heritage element as a testimony to remarkable experiences or historical facts
e. the aesthetic, technical or intrinsic material value of the element patrimonial assets
f. the architectural, urban and landscape design
g. the extent of the equity element and what is reflected in it from the point of view of collective memory
h. the importance of the equity element from the point of view historical or scientific research
i. the circumstances likely to lead to a decrease in loss of the perfority or integrity of the element Asset.

Article 21 Classification

1. The classification and disqualification of cultural heritage is made by ministerial diploma and shall be the responsibility of the member of the Government responsible for Culture, which shall include the rights and obligations of the owner.

2. For the evaluation of proposals for the classification of cultural heritage assets and values, a Cultural Heritage Advisory Committee shall be established by the Member of the Government responsible for Cultural Heritage in accordance with Article 64 of this Diploma.

3. The following cultural heritage assets are proposed with immediate effect:

    a. all monuments, sites or ensembles whose conservation is historically, prehistoric, architectural or artistic, a national public interest
    b. Monuments, sites or sets whose conservation presents from the historical, prehistoric, architectural or artistic point of view, a local public interest
    c. all movable cultural goods imported and manufactured on a date prior to 1900, and those which are included in monuments, sites or sets proposed for classification
    d. All materials found underground or in aquatic context, the result of archaeological research or single finding
    e. The significant archives and collections documenting the history of the country, including those of the Timorese Resistance and the documentation of all Timorese nationalist movements
    f. all expressions and assets of intangible cultural heritage attesting to the living culture of the communities inhabiting the national territory.

4. The proposal to classify a cultural heritage property is made by notification to the person concerned and has the same effects as the classification decision

5. The effects of the proposed classification shall cease to take place within 12 months of its notification if the classification of the property has not been decided

CHAPTER VI Property Cultural Heritage
Article 22 Real Estate Cultural Assets
The immovable material heritage comprises the architectural heritage, the archaeological heritage and the landscape heritage with cultural value

CHAPTER XII Impact assessment, plans and projects
Article 63 Projects, works and interventions
Until the preparation of any of the plans referred to in the preceding article, the granting of licenses, or the performance of licensed works, prior to the classification of the monument, set or site, depend on the prior assent of the member of the Government responsible for Culture. After the entry into force of the rescue detail plan, municipalities may license the works designed in accordance with the provisions of that company, without prejudice to the duty to communicate to the member of the Government responsible for Culture, within a maximum period of 30 days, the licenses granted.

CHAPTER XIII Advisory Committee on Cultural Heritage
Article 64 Functions and composition

1. The Advisory Committee on Cultural Heritage is set up as a consultation body to decide on proposals for classification and cancellation of classification of assets and to issue recommendations to the competent bodies on the protection, financing and use of cultural heritage assets.
2. The Advisory Committee on Cultural Heritage is composed of representatives of the member of the Government responsible for culture presiding and other relevant ministries, university professors, members of civil society, including representatives of NGOs and cultural associations, and by individualities of recognized cultural merit.
3. Its composition, in a variable but always odd number, shall be defined by invitation sent by the member of the Government responsible for Culture.
4. Its operation shall be subject to internal regulations approved by the member of the Government responsible for Culture.
5. The Advisory Committee of Cultural Heritage should meet ordinarily twice a year, proposing to the guardianship the classification or revocation of cultural heritage assets and values.

A6.11 Management options for the cultural heritage site

a. Site avoidance

If the boundaries of the heritage site have been delineated attempt must be made to avoid the location. The first option will be to realign and/or redesign the proposed construction and development to avoid the site. (The fastest and most cost-effective management option)

b. Site Protection

It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area in a prescribed manner to protect the heritage. The exact prescription would be site- specific.

c. Mitigation

If it is not feasible to avoid the site through realignment or redesign of the specific features or component of the IS scheme, the mitigation hierarchy is as follows:

- Avoidance – ensure minimum adverse impacts and implementation of any restoration measures, in situ
- Restoration of the functionality of the cultural heritage, in a different location.
- Removal of the movable material heritage or historical and archaeological materials in accordance with the prescription and direction of the heritage team.
- No compensation for loss is provided for in this CFP

Mitigation measures could be applied where tangible heritage that is replicable and not critical is encountered.

A6.12 Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

While the handling of such cases is based on the procedures and steps prescribed by the Heritage Team, there are two possible courses of action cited for the purpose of this CFP document.

Avoid: The development project is re-designed to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual or accumulative impacts associated with the rehabilitation of the proposed IS, and properly addressed by a comprehensive management plan.

Exhume: Exhumation of the remains where this is considered acceptable and as the most appropriate course of action by the authorities making the decision. This will involve the predetermination of a site suitable for reinterment of the remains. Certain ceremonies or procedures may need to be followed before the construction works can recommence in the site of the discovery.

A6.13 Monitoring

Local authorities, stakeholders and community members have a key role to play in the implementation and monitoring of the project.

Consultation with stakeholders will continue throughout the project cycle and is vital during the implementation. This will help ensure that stakeholders continue to be aware of the project, its progress and any changes in the project. It will also assist in identifying any issues as they arise.
The Secretary of State for Environment will be responsible to support the project and provide extension services to local beneficiaries along with being responsible for providing guidance during the implementation of the project's activities.
ANLA will be responsible for advisory support, inputs and providing the relevant technical trainings.

A6.14 Emergency Contacts

Secretary of State for Art and Culture
Name: Mr. Manuel Ximenes Smith, Director General Arts and Culture
Address: Avenida Praia dos Coqueiros, Pantai Kelapa, Dili, Timor-Leste
Contact: +670 77327189, manuelsmithtls@gmail.com

Ministry of State Administration
Name: Rosito Guterres – Director General Rural Development
Address: Rua Jacinto Candido Dili, Timor Leste
Contact: +670-77120725

Secretary of State for the Environment
Name: Augusto Pinto – Project Director
Address: Rua de Boa Ventura, mandarin, Dili, Timor Leste
Contact: +670-78427259

Table 9A: Other Contacts

No	Name	Agency/Institution	Contact Info.
1	Jehangir Khan	Project Manager	+670-77729826
2	Antonio Lelo Taci	National Authority for Environment License- Public Institution (ANLA-IP)	+670-77115444
3	Juliana Carvalho Rangel	National Project Engineer GCF Project Implementation Unit	+670-78579892
4	Crissantos da Conceição	Climate Change & Environment Officer GCF Project Implementation Unit, Cluster A Municipalities	+670-77153428, +670-76010668
5	Nelia Dos Reis Magno,	National Project Engineer GCF Project Implementation Unit	+670-77948866
6	Nelson Vicente Pereira	National Project Engineer GCF Project Implementation Unit	+670-77463847
7		Field Coordinator for target Municipality & Secretary of the GRM	

Annex 6 (A): SITE INCIDENT REPORT

Project No.
To: National Project Director
National Project Manager

From Municipality: XXXX Municipality
Date of Report: _____
Date of Occurrence: _____ Time of Incident:
Incident Location: Chainage: _____
Geo-Coordinates/GPS Location: _____; _____

Discovery made by:
Individual Completing this Form
Person(s) Present at the time of Discovery/Find: _____
Description of Discovery/Find:

Action Taken:

Incident Reported to:

Date Reported:
_____ Time: _____

Comments:

Report Prepared by:

CC: Director General, Secretary of State for Arts and Culture
Director General, Rural Development, MSA
Administrator of Municipality –
Director, Municipality PDIM
Director, Municipality MoPW, DRBFC
Chefe Suco, Suco XXXXX

Photos:

Photo	Brief Description

Annex 7 – Occupational Health and Safety Management Plan (OHSMP)

A7.1 General Information:

This Occupational and Health Safety Management Plan (OHSMP) has been developed to guide the management of OHS in the water supply scheme project. This plan will come into effect on the day of the award of the contract works to the contractor. The plan will be made available to the contractor and all personnel and workers on site to ensure that they can read, understand, clarify and ask question on any aspect of this OHSMP and its implementation on the project.

This OHSMP will be translated in Tetun and a copy will be displayed on a board at the worksite for the duration of the construction. The plan shall be reviewed and updated as necessary during the project implementation.

A7.2 Sub-Project Information:

Sub-Project Code	
Sub-Project Name	
Location	
Construction Period	

10.3 Contractor Details

Name of Contractor	
Address/Location	
Contact Details:	
Site Supervisor	
Contact Details	

A7.3 Policy/Legislation/Regulation

Labor and working conditions shall be in compliance with Government of Timor-Leste Labor Law No. 4 of 2012 that is applicable throughout the territory of Timor-Leste, to all workers and employers and respective organizations in all sectors of activity. This Labor Law addresses the basic requirements on labor relations applicable to individual and collective labor relations.

The following are specific areas of the law to considered and adequately managed during the implementation of the project:

Non-discrimination and equal opportunity	Article 6- The equality principle
Freedom of association and collective bargaining	Article 82- Freedom of association and to display information Article 83 Independence and autonomy
Clear terms of employment	Articles 9-18
Workers shall have the right to regular and prompt payment of wages	Article 40- Payment of Remuneration: method, place and time
Prohibition of child labor	Article 66- General Principles Article 67-Special Protection

	Article 68-Minimum age for admission to work[28] Article 69: Definition of Light work [29]
Prohibition of forced and/or bonded labor; and	Article 8- Prohibition of forced labour
Establishment of a *Grievance redress mechanism for workers*	Article 97- Dispute resolution

In addition, Article 7 on Harassment and Article 34-37 on Occupational Health, Hygiene and Security will be also taken into consideration.

Timor-Leste has ratified six of the eight ILO fundamental conventions:

Table A10- 1: Ratification of International Labour Conventions

Convention	Ratification	Date
Forced Labor Convention (C029)	✓	16 Jun 2009
Minimum Age (C138)	X	Not ratified
Freedom of Association and Protection of the Right to Organize Convention (C087)	✓	16 Jun 2009
Right to Organize and Collective Bargaining Convention (C098)	✓	16 Jun 2009
Equal Remuneration Convention (C100)	✓	10 May 2016
Discrimination Convention (C111)	✓	10 May 2016
Worst Forms of Child Labor Convention (C182)	✓	16 Jun 2009
Abolition of Forced Labour Convention, 1957 (C105)	X	Not ratified

According to the 2020 Country Reports on Human Rights Practices of Timor-Leste, 'the [Labour code] does not prohibit all of the worst forms of child labor. The labor law prohibits children younger than 17 from all forms of hazardous work, a definition that leaves 17-year-olds vulnerable to child labor and exploitation."[30]

Further, the government has established laws and regulations related to child labour.

Table A10- 2: National Laws and Regulations on Child Labor

Standard	Meets International Standards	Age	Legislation
Minimum Age for Work	Yes	15	DL 4/2012 Article 68 of the Labour Code (26)
Minimum Age for Hazardous Work	No	17	DL 4/2012 Article 67 of the Labour Code (26)
Identification of Hazardous Occupations or Activities Prohibited for Children	Yes		List of Hazardous and Prohibited Activities to Children Under the Age of 18 (27)

[28] Article 68 on Minimum Age for Work Admission, that regulates 15 years old as the minimum age for admission with exclusion of young person in the age between 13 to 15 years old may perform light work.

[29] Article 69 on the definition of Light Work, where this means an activity that comprises simple defined tasks calling for basic skills, not requiring any physical or mental effort that would put the young person's health and development at risk, and not jeopardizing their schooling participation in Government-approved vocational training programs.

[30] https://www.state.gov/reports/2020-country-reports-on-human-rights-practices/timor-leste/

Prohibition of Forced Labor	Yes		Articles 155, 162–163, and 166 of the Penal Code; Articles 8 and 67 of the Labour Code (26,28)

Also highlighted in the 2020 Country Report on Human Rights Practices of Timor-Leste, "the labour code does not apply to family-owned businesses operated for subsistence, the sector in which most children worked. By year's end the government had not adopted a list of prohibited hazardous work."[31]

There is a draft Child Protection Law pending[32] to be approved by the Parliament in 2022 which strengthens the promotion of children's rights and the protection of children at risk and in danger. Therefore, this plan will ensure children aged 17 and in rural areas will be protected against child labour.
Several other related international conventions on Occupational Health and Safety are not ratified by Timor-Leste including:

- Occupational Safety and Health Convention (C155)
- Hygiene (Commerce and Offices) Convention (C120),
- Working environment (Air Pollution, Noise and Vibration) Convention (C148)
- Safety and Health in Construction Convention (C167)
- Prevention of Major Industrial Accidents Convention (C174)

Guides and codes of practice on OSH are also limited.

A7.4 Roles and Responsibilities

Table A10- 3: Roles and Responsibilities in implementation of OHSMP

Name & Contact Info	Position	Responsibilities
[Name of Contractor]	Contractor	• Prepare the detailed Method Statement taking into consideration OHS • Implement the OHSMP. • Recruit/employ workforce aged above 18 and no workforce under 17 is engaged. • Ensure that all works are conducted in a manner without any risk to the workers including sexual harassment. • Plan the implementation of the work safely. • Ensure that the labourers are trained on OHS. • Ensure that corrective actions are implemented for any mishap. • Assist in rehabilitation and return to work initiatives. • Ensure that they have the required and workable tools and equipment for the task. • Ensure grievance resolution. • In line with project GAP, ensure safety of male and female workers arriving and leaving the site, proximity from site to workers' accommodation, as well as interactions between male and female workers and community. • Health, safety and environment guidance (such as IFC guidelines) is followed to ensure the construction site is

[31] https://www.state.gov/reports/2020-country-reports-on-human-rights-practices/timor-leste/
[32] http://www.tatoli.tl/en/2021/09/21/pn-approves-draft-law-on-child-protection-in-generality/

		sufficiently restricted to avoid endangering children and/or unauthorized access.
	Construction Workers	• Take reasonable care of their own health and safety. • Take reasonable care that their conduct does not adversely affect others. • Comply with the instruction, so far as they are reasonably able. • Cooperate with reasonable notified policies or procedures.
[Name of Project Engineer]	Project Engineer	• Monitor the compliance of the OHSMP • Ensures that the Site Safety Procedures are observed • Reviews regular OHS reporting by the contractor
[Name of Field Coordinator]	Field Coordinator	• Monitor the compliance of the OHSMP • Provide regular reports to Engineer, PMU • Ensures that all incidents are reported and that the Incident Report is prepared and submitted in accordance with the procedures • Align the implementation of the plan with other relevant plans including Gender Action Plan.

A7.5 Construction Safety Plans and Work Method Statements

The contractor is required to prepare and submit a detailed Method Statement (MS) prior to mobilization on site and commencement of the construction works. The MS shall detail all steps the steps that will be taken during construction and measures to comply with the OHSMP.

At the request of the project Engineer, the contractor shall provide further details about any specific activity or task prior to work commencing on site by contractors who will be performing the task(s).

A7.6 Potential Risks from Construction Activities include (but not limited to):

- Personnel entering trenches more than 1.0 meter deep
- Working near or adjacent to a steep drop or slope on the road
- Occupational health and safety risks due to exposure of workers to unsafe conditions while operating or handling of equipment and machinery
- Prolong exposure to air and noise pollution
- Using hazardous or flammable substances
- Risk of electrical shock, working near an exposed energized electrical installation
- Working with a mobile plant and equipment such as concrete mixers, plate compactors, vibrators etc.
- Lifting heavy rocks to fill up of gabion baskets or for masonry construction works
- Other activities that are considered to be of a hazardous/high risk nature and has the potential to cause death or injuries to personnel and/or damage to plant, equipment, structures etc.

A7.7 Hazard Identification and Risk Management

Hazard assessments and risk management are to be undertaken prior to commencing any task to assess the risk of injury and/or damage to plant and equipment.

The following shall be considered in the risk assessment:

1. Elimination – Eliminate the hazard, remove it from the work site and risk to workers, residents and visitor's health and safety.
2. Substitution – Substitute the risk item/hazardous procedure for an item/procedure that is less hazardous and poses a lesser risk to workers.
3. Engineering – Change the layout or design of the site, equipment or work process – e.g. noise prevention/suppression, mechanical aids for manual handling or materials or heavy items.
4. Isolation – Isolate or separate the hazard from the person – e.g. screens or barriers, move or enclose equipment.
5. Administration – Job rotation/reduction in exposure by working less hours in hazardous environment, provide appropriate training and adequate supervision etc.
6. Personal Protective Equipment (PPE) – such as helmets, high-visibility/reflective vests, gloves, hearing protection, safety glasses, respiratory protection equipment.

A7.8 Site Safety Procedures to be observed

- The contractor is to provide adequate number of good quality appropriate PPEs – helmets, reflective vests, gum boots, gloves, ear plugs, face masks etc.
- Provide Training to workers on use of appropriate PPEs and how to respond during emergency
- Wear PPE at all times to minimize risk and to prevent injury to workers
- Do not start work without providing induction to workers and site personnel
- Ensure that the construction site is kept organized and clean
- Think and act "safety first'
- Install adequate signage to alert and follow safety signs and procedures.
- Displaying traffic cones and cautionary tapes for clear direction where required to guide road users.
- Do not work in an unsafe area without first assessing the risks and ensure that all safety measures are put in place
- Report any problem or issue immediately.
- Use equipment for the purpose they are designated and make sure they are in proper working condition
- If in doubt, always ask

A7.9 Machinery/Plant/Equipment Vehicles and Tools

- All speed limits, traffic rules, signs and directions are to be obeyed at all times within the site and surrounding areas.
- Motor vehicles, trucks etc. are not to be overloaded or carry loads in excess of its allowable and legal weight.
- Personnel working around and/or directing equipment/machinery on site are to wear high visibility clothing.
- All plant, vehicles, equipment etc. are to have the required current registration, certification, be adequately maintained, have all guards effective and operational, be suitable for the application and comply with the national regulations.
- Plant, machinery and vehicles etc. are to be operated in accordance with statutory requirements and manufacturer's instructions.
- All operators are to be experienced and hold a current relevant certificate of competency, license and/or have documented evidence of experience applicable to the item they are to operate.
- Fuel powered plant (such as concrete mixers etc.) and equipment are not to be used in or near areas where exhaust/toxic fumes can accumulate.
- Items/materials that are to be cut, drilled and/or shaped in any way by a hand power tool are to be secured in a stable position to prevent movement or securely clamped to a work bench.

A7.10 Occupational Health and Safety (OHS) Monitoring

The contractor will provide compliance in initial report to the Engineer and thereafter submit a compliance report every month. The following shall be covered as part of OHS monitoring:

- Training and awareness for workers – OHS measures, Emergency Management, Use of PPEs
- Health check-up records of workers
- Identification of unsafe activities or workplace risks
- Identification of hazardous working locations and installation of markings
- Emergency response procedure
- Availability of PPEs – types, numbers
- Incident and/or accident reporting

A7.11 Personal Protective Equipment (PPE)

Site personnel are to wear appropriate Personal Protective Equipment (PPE) appropriate for the tasks they are to perform.
Contractors are to supply all appropriate PPE and must ensure construction workers have received appropriate instruction on the correct selection, use, care, storage and maintenance of the PPEs.

PPEs include safety helmets, high visibility/reflective vests, appropriate safety footwear, eye, hearing and respiratory protection, and gloves and protective clothing are to be worn in areas of risk to prevent injury from contact with hazardous substances, and sharp or abrasive objects.

The contractor shall ensure that the PPEs are:

- Worn to minimize risk and to prevent injury to workers
- Assessed for each application and suitable for the nature of the work and any risk associated with it.
- Of proper quality, suitable size and fit and reasonably comfortable for the workers to use or wear it.
- Regularly checked and well maintained so that the risk is minimized to the user/workers.
- Not defective and/or non-compliant with safety requirements. Defective PPEs are to be removed from the site immediately upon detection.

A7.12 Equipment Safety

Any defective plant and/or equipment is to be removed from service immediately upon detection.

A7.13 Facilities on Site

- Adequate toilet and hygiene facilities are to be provided at the worksite.
- Covid-19 prevention measures should be adopted. The contractor shall put in place appropriate facilities for handwashing with soap and water.
- Waste receptacles shall be placed in designated places on site to collect refuse/rubbish.
- Drinking water shall be provided to workers and visitors on site.

A7.14 Communication and Consultation

(a) Communication

The contractor is expected to make sure that all the workers are fully aware of all OHS requirements.
The OHS information will be communicated to everyone involved in this project by:

- Induction Training
- Pre-work meetings.
- Construction site meetings.
- Incident reports and outcomes.
- Distributing safety alerts or guidance material about the risks/incident

(b) Disciplinary Procedures

If the contractor and its workers do not comply with the requirements of this plan, the following shall apply:

- First violation: Verbal warning and record of the incident the site logbook
- Second violation: Written notification.

- Third violation: Complete removal/suspension from the project site.

For serious breach of safety, the worker(s) shall be immediately removed from the site. This shall be followed in writing.

(c) Notice Boards on Site

The contractor shall erect the project signboard in a location that is visible and at the entrance to the site. At minimum the information shall include:

- Name of the project
- Name of contractor implementing the project
- Period of Implementation:
- Contracting Authority
- Funding Agency

All signs and billboards should be visible (in local language) in the location where the construction works is being implemented.

(d) Reporting Incidents on Site:

All work-related injuries, illnesses, dangerous events, incidents etc. are to be reported to the site/project Engineer and recorded on a Site Incident Notification Form. The Template/Form to record the incident is attached in Annex.

(e) Emergency Contacts

The emergency contact list shall be provided in a leaflet and be available on site at all times. The emergency contact details for the contractor's personnel shall be maintained in a register. The emergency contact numbers shall be displayed at designated locations for the workers and the public.

A7.15 First Aid

The contractor is required to make provision to have on site at all times a fully stocked First Aid Kit and emergency medicines. If anyone becomes aware that an item of first aid is out of stock or out of date, they shall notify the contractor/engineer immediately.
The contractor shall ensure to have personnel on site that is trained accordingly to administer First Aid.

A7.16 Competent Personnel and Training

- Personnel working in prescribed tasks such as operation of equipment are to be experienced and hold current relevant certificates of competency,
- Apprentices and trainees are to be supervised at all times by suitably qualified and experienced trades or other relevant personnel.
- Personnel should not carry out any works that they are not familiar with, have not been trained to perform or are not licensed to do,

Annex 10 (a): SITE INCIDENT NOTIFICATION FORM

Report Template – Injury, health and/or safety issue/incident on the construction site.

Instructions:
This form shall be used to report all work-related accidents, injuries, illnesses or medical situations and/or "near miss" events (which could have caused an injury or illness). This helps us to identify and correct hazards before they cause serious injuries.
The form should be completed within 24 hours of the event by a team member and submitted for further action.

Project No.

To: Project Engineer, Project Manager
From : Municipality XXXX
Date of Report: _____
Date of Incident: _____ Time of Incident:
Location of Incident: _____ Chainage: _____

INFORMATION ABOUT PERSON (s) INVOLVED

NAME:			
CONTACT INFO:			
☐ Employee	☐ Visitor	☐ Resident	☐ Other _____

INFORMATION ABOUT INCIDENT

Description of Incident:
(what happened, how it happened, factors leading to the event, etc.)

Were there any witnesses to the incident? Yes No
Person(s) Present at the time of incident: _____
Was there any injury to individual: ☐ Yes ☐ No

If yes, was medical treatment provided? ☐ Yes ☐ No
If yes, where was treatment provided:
☐ On Site/First Aid ☐ Hospital ☐ Other

Was the incident Reported:
Date Reported: _____ Time: _____
Local Authority Notified : ☐ Yes ☐ No

PNTL/Police Notified : ☐ Yes ☐ No
Action Taken based on report:

Describe the corrective measures taken to immediately address hazards related to incident:

Name of individual submitting this report:
Position:
Signature:
Date:

CC: Administrator of Municipality –Municipality
Director, Municipality PDIM
Director, Municipality MoPW, DRBFC,
Chefe Suco XXXXXX

OFFICIAL USE:

Document follow-up actions taken after receipt of the incident report.

Date	Action Taken	By Whom