"Revised ProDoc"

United Nations Development Programme
Project Document

Project title: Mainstreaming climate risk considerations in food security and IWRM in Tsilima Plain and upper catchment area		
Country(ies): Eritrea	**Implementing Partner (GEF Executing Entity):** Ministry of Land, Water and Environment (MoLWE)	**Execution Modality:** *full National Implementation (NIM)*
Contributing Outcome (UNSDCF/CPD, RPD, GPD): UNSDCF Outcome 4: *By 2026, people in Eritrea have benefited from climate-resilient, sustainable environment and natural resources management.*		
UNDP Social and Environmental Screening Category: *Substantial*	**UNDP Gender Marker:** *2*	
Quantum Award ID: 00103252.1	**Quantum Project ID:** 00103252	
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LPAC meeting date: April 30, 2024		
Last possible date to submit to GEF: *N/A*		
Latest possible CEO endorsement date: *N/A*		
Project duration in months: 60		
Planned start date: June 2024	**Planned completion date: June 2029**	
Expected date of Mid-Term Review (MTR) submission to the GEF: *December 2026*	**Expected date of Terminal evaluation (TE) submission to the GEF:** *February 2029*	
Expected Operational Closure Date: February 2030	**Expected Financial Closure Date:** *August 2030*	

Brief project description:

The population growth in the Tsilima Plain and its upper catchment in the Central Highlands of Eritrea places increasing demands on agricultural production to supply food. The result is higher pressure on land, forest, and water resources through i) the expansion of agriculture into natural ecosystems; ii) overgrazing and degradation of rangelands; and iii) the unsustainable use of groundwater. Moreover, traditional land-tenure systems that disincentivise communities to implement long-term soil and water conservation measures mean that ecosystems are degrading to the point where they are no longer able to provide the goods and services that underpin productive agricultural activities. Climate change poses an additional threat to the livelihoods and food security of communities. In the project area, the widespread production of sorghum and barley is threatened by decreased precipitation, increased seasonality in rainfall, increased temperatures, and increased rates of evapotranspiration. The problem that this project seeks to address is the threat posed by climate change to water resources for agriculture through reduced groundwater recharge in the Tsilima Region.

The preferred solution is to reduce the climate change vulnerability of local communities in the region by: i) enhancing the capacity of government institutions and local communities to mainstream climate risks into research, policies and land-use planning; ii) implementing climate change adaptation (CCA) interventions that increase the adaptive capacity of local communities; iii) promoting the implementation of on-farm and off-farm soil and water conservation measures; and iv) establishing a system for monitoring and evaluating the effectiveness of various approaches to CCA to inform a process of adaptive management. Institutional, technical and financial barriers to achieving the preferred solution will be overcome by: i) enhancing the capacity of academic institutions to conduct research on CCA; ii) increasing the technical capacity of relevant government departments to plan and implement adaptation interventions and to provide agricultural extension services to local communities; iii) implementing integrated water management, climate-smart agriculture, climate-smart livestock management and watershed restoration measures; and iv) raising public awareness and training local communities on the benefits of an ecosystem-based approach to CCA.

FINANCING PLAN	
GEF Trust Fund grant	US$ 9,050,000
Confirmed cash co-financing to be administered by UNDP	US$ 2,500,000
(1) Total budget administered by UNDP	**US$11,550,000**
(2) Total confirmed co-financing to this project not administered by UNDP	**US$25,000,000**
(3) Grand-total project financing (1) + (2)	**US$36,550,000**

SIGNATURES:

Name & Signature:	**Agreed by the Ministry of Finance and National Development**	**Date/Month/Year:**
Giorgis Teklemikael (PhD) Minister	Ministry of Finance & National Development State of Eritrea	10/07/2024
Name & Signature: Tesfai Ghebreselassie Minister of Land, Water & Environment	**Agreed by Ministry of Land, Water and Environment** Ministry of Land, Water & Environment State of Eritrea	**Date/Month/Year:** 27/06/24
Name & Signature: PA LAMIN BEYAI UNDP Res. Rep.	**Agreed by UNDP** United Nations UNDP UNDP Asmara - Eritrea Development Programme	**Date/Month/Year:** *within 6 months of GEF CEO endorsement* 20/06/2024

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List of acronyms and abbreviations

AED	Agricultural Extension Department
AMU	Agro-Meteorological Unit
ASIS	Agricultural Strategic and Information System
BPPS NCE	Bureau for Policy and Programme Support, Nature, Climate and Energy
CBO	Community-based organisation
CCA	Climate change adaptation
CSA	Climate-smart agriculture
DoL	Department of Land
EWS	Early warning system
FAO	Food and Agriculture Organisation of the United Nations
FFS	Farmer field school
FWA	Forestry and Wildlife Authority
GAP	Gender Action Plan
GCF	Green Climate Fund
GEF	Global Environment Facility
GIS	Geographic information system
GoSE	Government of the State of Eritrea
GPS	Global positioning system
GRM	Grievance redress mechanism
HAC	Hamelmalo Agricultural College
ICU	Information and Communication Unit
IFAD	International Fund for Agricultural Development
INRM	Integrated natural resource management
IP	Implementing partner
IUCN	International Union for Conservation of Nature
IWM	Integrated watershed management
IWRM	Integrated water resources management
KAA	*Kebabi* Administration Area
LDCF	Least Developed Countries Fund
MoA	Ministry of Agriculture
MoFND	Ministry of Finance and National Development
MoLG	Ministry of Local Government
MoLWE	Ministry of Land, Water and Environment
MoTC	Ministry of Transport and Communication
MSU	Meteorological Service Unit
MTR	Mid-term review
M&E	Monitoring and evaluation
NAPA	National Adaptation Programme of Action
NARI	National Agricultural Research Institute
NCNSA	National Capacity Needs Self-Assessment
NFSS	National Food Security Strategy
NGO	Non-governmental organisation
NIM	National Implementation Modality
NUEW	National Union of Eritrean Women

NUEYS	National Union of Eritrean Youth and Students
PIR	Project Implementation Report
PM	Project Manager
PMU	Project Management Unit
POPP	Programme and Operations Policies and Procedures
PPG	Project Preparation Grant
RSD	Regulatory Services Department
SDG	Sustainable Development Goal
SFM	Sustainable forest management
SLM	Sustainable land management
SPCF	Strategic Partnership Cooperation Framework
TE	Terminal evaluation
ToR	Terms of reference
UNDP	United Nations Development Programme
UNSDCF	United Nations Sustainable Development Cooperation Framework
UNFCCC	United Nations Framework Convention on Climate Change
VAC	Village agricultural committee
VCF	Village Contact Farmer
VRA	Vulnerability Reduction Assessment
WRD	Water Resources Department
WUA	Water user association

II. DEVELOPMENT CHALLENGE

Baseline scenario in the Tsilima Plain and upper catchment

Rainfed agriculture is the main source of livelihood for the local communities in the Tsilima Plain and upper catchment areas where this project will be implemented[1]. This means that their means of supporting themselves are highly vulnerable to climate-induced natural disasters — including floods and droughts. The impact of these disasters on farming communities is made even more severe in combination with the drivers of ecosystem degradation that are present in the area, including: i) growing population pressure; ii) agricultural expansion into marginal lands and unsustainable agricultural practices; iii) limited coordination of land-use planning; and iv) poverty. Moreover, inadequate management of natural resources may result in conflict over water resources. These conditions are expected to worsen under projected climate change scenarios, with the impact of climate change already being felt in the Tsilima Region (see **Annex 12**[2]).

Climate projections for Eritrea have yet to be developed or downscaled to the Central Highlands Zone[3], where the Tsilima Region is located. There is only one model and one emission scenario (A2) for climate simulations in the East African region. Despite the uncertainty of the results, all scenarios indicate an increase in temperatures. The most recent climate change projections indicate that by the year 2100, Eritrea's mean annual temperature is likely to increase by 1.4–5.8°C[4]. In the case of mean annual rainfall, most climate change models indicate an increase between October and December and a decrease during the January to March and April to July periods. Droughts are likely to increase under climate change in Eritrea, reducing agricultural productivity. Insufficient information is available to predict the change in frequency of extreme events — such as flooding — although an increase in such events has been identified as a threat in the National Adaptation Programme of Action (NAPA) (2007)[5].

Generally, Eritrea's rural villages are in areas with restricted water supply. The predicted warmer temperatures and uncertainty in precipitation patterns are expected to affect evaporation and humidity, which will further affect rural water sources, resulting in: i) a decrease in stream flows; ii) a drop in groundwater levels; iii) the drying of springs; and iv) the disappearance of base flows. Climate change and associated extreme weather events will impact the shallow aquifers of the Tsilima Plain and upper catchment areas. Some changes have already been observed — groundwater levels fluctuate seasonally because of rainfall variability and groundwater availability is decreasing (see **Annex 12**). Moreover, the reduced river flow will limit the supply of water for domestic, agricultural and livestock purposes.

The Tsilima Plain has been identified as a priority development area in part because of its natural resource base, which is favourable for the intensification and diversification of agricultural production. During the Project Preparation Grant (PPG) phase of this project, focus group discussions with local communities in sub-*zoba*[6] Dbarwa, where the project will be piloted, confirmed that: i) the redistribution of land every five to seven years in accordance with the traditional *diessa* land-tenure system disincentivises the implementation of long-term improvements such as terracing and tree planting; ii) cropland is open to post-harvest communal grazing, resulting in the removal of crop residues that could provide ground cover and nutrient recycling and in the destruction of topsoil structure through trampling; iii) land cannot be sold or used as collateral, limiting the availability of credit for farm improvements; and iv) an increase in households in the area generally results in the reduction of household plot sizes (see **Annex 12**).

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[1] GoSE. 2012. *Second National Communication*.

[2] Studies, interviews and field trips conducted to update this project document in September 2022 revealed no significant change from the 2016 baseline situation as presented in the final baseline study report (**Annex 12**). Some indicators, however, have been revised and incorporated the project results framework of the newest version of the project document.

[3] The downscaling of Global Circulation Models to finer spatial and temporal scales has received relatively little attention in Africa. However, there has been a recent attempt at producing a regional model for East Africa using the Special Report on Emissions Scenarios and AR4 GCMs. The data can only be applied at the broad level, rather than at the sub-regional scale, owing to coarse model resolution (200 km).

[4] GoSE. 2001. *Initial National Communication*.

[5] Department of Environment, MoLWE, GoSE. 2007. National Adaptation Programme of Action of Eritrea.

[6] Eritrea is divided into six regions (*zobas*) and, in turn, 58 sub-regions (sub-*zobas*); each sub-*zoba* is further subdivided into several *mimhidar kebabi* or local administrative areas. *Kebabis* comprise two or more villages brought together to facilitate their administration.

Barriers to increasing Eritrea's capacity to adapt to the effects of climate change

There are multiple institutional, technical, and financial barriers in Eritrea to addressing and managing the effects of climate change. In 2006, a National Capacity Needs Self-Assessment NCSA for Global Environmental Management was undertaken (see **Annex 18**). This assessment noted that the relevant ministries — including the Ministry of Land, Water and Environment (MoLWE) and the Ministry of Agriculture (MoA) — need additional staff with skills in climate risk identification, analysis, and management. The NCSA also identified other barriers, including: i) limited inter-institutional coordination and communication; ii) inadequate technical and scientific capacity to identify, plan and implement climate change adaptation (CCA) interventions; iii) inadequate funding; and iv) inadequate research and training in identification and analysis of climate risks and impacts and in designing strategies for mitigation, adaptation and management of the impacts. This project will contribute to increasing Eritrea's capacity to adapt to the effects of climate change by implementing a suite of complementary measures to address these barriers.

Limited inter-institutional coordination with regards to planning for CCA
An effective national response to climate change requires coordination between relevant ministries and institutions, including *inter alia* the MoLWE, the MoA, the Ministry of Transport and Communication (MoTC) and the National Agricultural Research Institute (NARI), supported by the capacity building of staff and the integration of climate change considerations into multi-sectoral policies, strategies, and development plans. There has been limited coordination between departments in the Government of the State of Eritrea (GoSE), academic institutions and climate change projects in Eritrea. Efforts to improve coordination between the MoLWE and the MoA are hampered by challenges that include inadequate human resources and siloed activities. The shortage of skilled staff has limited the coordination of donor-funded environmental and climate-related projects, as well as the implementation of multilateral environmental agreements.

Limited institutional and technical capacity to plan and implement CCA interventions.
Although climate change is recognised as a matter of national importance in Eritrea's NAPA[7], the technical and scientific knowledge and understanding of climate change and adaptation in the country are limited. This has restricted the ability of the MoA's Agricultural Extension Department (AED) to assist farmers to employ appropriate and responsive strategies and tools for adapting to climate change. In addition, the ability to utilise models to produce a range of projections for Eritrea, prepare seasonal forecasts and issue early warnings is challenged by the shortage of qualified meteorologists in the country. The shortage of skilled personnel is partly attributable to the low number of mathematics, physics, or statistics graduates. Gaps in the technical capacity of GoSE technical staff can also be ascribed to: i) insufficient training of staff employed in relevant departments in the MoLWE and the MoA; and ii) limited technical skills at the MoLWE, MoTC and MoA, in particular at the *kebabi*[8] level.

Limited transfer of knowledge and technology
There is no well-organised system for documenting and disseminating best practices for CCA. Moreover, the provision of knowledge-based advice from extension agents to farmers is limited by the quantity and quality of the information available to them. Coordination and communication between NARI and the extension agents from MoA's AED are inadequate. These problems are compounded by limited feedback from farmers to extension agents regarding the performance of technologies or crop varieties developed by NARI. In addition, NARI's Information and Communication Unit (ICU)has links with only a handful of regional research institutions, where collaboration is limited by financial and technical constraints. There are no equivalent ICUs in other GoSE departments —at neither the national, nor the sub-national levels. The transfer of knowledge and technology between institutions, extension agents, farmers and the community at large is therefore limited.

Inadequate scientific data, historical climate information and monitoring networks or stations
During Eritrea's 30-year war for independence, many of the country's meteorological stations were destroyed. GoSE's capacity to operate and maintain the hydrological network was also severely constrained, but this improved at the end of the war in 1991. As a result, Eritrea has no reliable historical climate data to inform the development of accurate national climate change scenarios and subsequent adaptation plans for the country. The MoTC, MoLWE and MoA have

[7]Department of Environment, MoLWE, GoSE. 2007. National Adaptation Programme of Action of Eritrea.
[8] Eritrea is divided into six regions (*zobas*) and, in turn, 58 sub-regions (sub-*zobas*); each sub-*zoba* is further subdivided into several *mimhidar kebabi* or local administrative areas. *Kebabis* comprise two or more villages brought together to facilitate their administration.

since established meteorological stations across the country. However, one of the legacies of Eritrea's colonial history is the absence of an institutional framework of systemic data collection and documentation with regards to climate, natural resources, and the environment. An additional challenge to maintaining accurate and updated data is the variable development of Eritrea's telecommunication infrastructure, which hinders the collection and transfer of data. The country's Initial Communication to the United Nations Framework Convention on Climate Change (UNFCCC) emphasises that current hydro-meteorological data collection activities rely on field equipment with a capability for automatic data recording, which is then transported to the Meteorological Service Unit (MSU) of the MoTC for the downloading of data and development of seasonal forecasts. Similarly, the Agro-Meteorological Unit (AMU) of the MoA collects agro-meteorological and climate data from 160 rain gauge stations and five automatic and non-automatic weather stations across Eritrea via text messages and monthly written reports for distribution to potential users. The process of transferring data is further restricted by the country's inadequate telecommunication infrastructure. Internet connectivity and mobile signal are restricted — particularly in rural villages — because of topography and limited infrastructure. As a result, institutions do not have the facilities to acquire real-time data or to access national, regional, and international databases. This is a barrier to the comprehensive and effective use of climate information and the dissemination of early warnings in Eritrea, limiting appropriate responses to climate change.

Limited knowledge and awareness of the value of ecosystems, climate change and CCA interventions
There is limited knowledge and awareness across Eritrea of the role of ecosystems in reducing the negative effects of climate change, particularly at the level of resource users. In addition, the *zoba* and sub-*zoba* administrations have limited knowledge of how an integrated approach to adaptation can increase the adaptive capacity of local communities to the effects of climate change. This is a barrier to the effective planning and implementation of CCA interventions in rural areas. Ecosystem degradation resulting from unsustainable resource use by local communities is partly the result of limited knowledge of the benefits of maintaining functional ecosystems. For example, local communities are largely unaware that watershed degradation alters discharge, resulting in: i) occurrences of flash floods; ii) reduced water infiltration, groundwater recharge and soil moisture; iii) erosion; and iv) siltation.

Insecurity of tenure reduces incentives for investing in climate-smart sustainable land management (SLM)
Farmers across Eritrea are unwilling to make long-term investments in land when it will be reallocated to another farmer in accordance with the traditional *diessa* land-tenure system. In the Tsilima plain and its upper catchment, the reallocation of community land in villages occurs after a period of no more than seven years. The *diessa* system is perceived as a barrier to farmers investing in cost-effective and sustainable measures to address climate change. Consequently, few farmers are planting trees on agricultural land or constructing and maintaining terraces, bunds, and other soil conservation structures. Although the GoSE introduced legislation to change the traditional *diessa* system, institutional constraints — both technical and financial —have delayed its implementation. In particular, the Department of Land (DoL) — responsible for the implementation of the Land Proclamation[9] — has insufficient equipment for the mapping of resource availability and quality assessments, which are preconditions for the allocation of land parcels for different uses. In addition, due to the sensitive nature of land governance, the GoSE is being purposefully slow in its implementation of the Land Proclamation.

Limited on-the-ground CCA interventions
Few CCA interventions are currently being implemented in Eritrea. As a result, the benefits and cost-effectiveness of such interventions have not been sufficiently demonstrated to policy- and decision-makers. Without sufficient demonstration, it is unlikely that: i) CCA will be integrated into local and national policies, plans and legislation; or that ii) local communities will support and contribute to CCA interventions. Technical protocols for implementing such interventions have not been produced because there has been low integration of climate change aspects into natural resource management and ecosystem restoration. Consequently, institutions and ministries responsible for natural resource management and ecosystem management have limited access to nationally appropriate tools or documents to guide them in the implementation of CCA interventions.

[9] The Land Proclamation No. 58/1994 gives the GoSE ownership rights to all land of the state and eliminates traditional village or family ownership structures, such as the *diessa* land-tenure system. The land policy aims to eliminate periodic redistribution, curtail land disputes, increase the duration of the land rights and enhance the exclusivity and transferability of land. Under this proclamation, GoSE retains the rights to distribute land to the villages, who are legally entitled to a piece of land with a usufruct right for life. The land cannot be sold, transferred or mortgaged. Therefore, the usufruct right will incentivise farmers to invest in their land, as they can be assured of long-term benefits.

Baseline projects, programmes, strategies, and plans

No single initiative can remove all the barriers to increasing Eritrea's capacity to adapt to the effects of climate change. However, this project will work in coordination with other water-, agriculture- and climate change-related initiatives to build on their advances in addressing these barriers. This project has been developed using the GEF Updated Results-Based Management Framework for the LDCF/Special Climate Change Fund and the 2014–2018 GEF-6 Programming Strategy on Adaptation to Climate Change for the LDCF and Special Climate Change Fund. This project is therefore aligned with the strategic objectives of the LDCF, namely to: i) reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change; ii) strengthen institutional and technical capacities for effective CCA; and iii) integrate CCA into relevant policies and plans.

This project aligns with these LDCF objectives in that it will: i) increase adaptive capacity to respond to the effects of climate change; ii) enhance national and sub-national institutional and technical capacity for managing ecosystems for resilience; iii) implement on-the-ground interventions that increase the resilience of Eritreans in the Tsilima Region to the effects of climate change; iv) enhance communities' capacity for SLM, sustainable forest management (SFM) and integrated water resources management(IWRM)to increase the adaptive capacity of surrounding ecosystems; v) demonstrate cost-effective ecological interventions for restoring degraded watersheds; vi) improve the quality and availability of water through integrated watershed management (IWM) practices; vii) promote food security by decreasing agricultural losses resulting from the negative impacts of climate change; and viii) reduce vulnerability to the adverse effects of climate change.

This project's overall objective is to integrate adaptation measures into ecosystem restoration and agricultural production systems to address climate change in Eritrea and secure the benefits of the National Food Security Strategy (NFSS) and the IWRM Action Plan. By doing so, this project will support the implementation of Priorities 3, 4 and 5 of Eritrea's NAPA[10], namely i) introducing community-based pilot projects to intensify existing production models that arear-specific to the eastern and north-western lowlands and species-specific to suitable sheep and goat breeds; ii) encouraging afforestation and agroforestry through community forestry initiatives; and iii) supporting groundwater recharge for irrigation wells. Moreover, this project is in alignment with several national strategies and plans.

National Food Security Strategy
The NFSS addresses national food security at the household level. This project will support the NFSS by developing and disseminating appropriate, climate-smart technologies that will enhance agricultural production and productivity. In addition, this project will develop climate-resilient land-use and area development plans with the local communities, which will promote sustainable land and resource use.

IWRM Action Plan (2009)
The IWRM Action Plan is aimed at enabling Eritrea to systematically address water management issues. The overall objective of the Plan is to contribute to the implementation of IWRM in Eritrea, which is aligned with GoSE policies, laws and strategies. This project will support the Plan to improve the water-resources information database by undertaking comprehensive baseline assessments and monitoring water resources. In addition, this project will improve: i) the knowledge base of water resources; ii) the understanding of the existing and projected demands for water; and iii) the capacity of water management institutions to manage both surface and groundwater resources. Information gathered by the baseline assessment and ongoing monitoring will inform the management of watersheds, as well as the design of measures for the capture, storage, and distribution of water.

Environment Protection, Management and Rehabilitation Framework Proclamation No. 179/2017
The main objectives of this Framework are to: i) set the foundation for environmental management and protection laws and provide the institutions and legal instruments for their implementation and enforcement; ii) advance an environmental policy framework consistent with sustainable development; iii) guarantee and promote maximum public and community participation in the conservation, protection and enhancement of the environment; and iv) set up the basis for Eritrea's effective contribution to and benefit from international cooperation in the global efforts for environmental protection. This project's design has considered this Framework and will be guided by it throughout this project's implementation.

[10]Department of Environment, MoLWE, GoSE. 2007. National Adaptation Programme of Action of Eritrea.

National Environmental Management Plan for Eritrea (1995)
This Plan is under revision, in line with Article 17 of the abovementioned Framework. This requires identifying the main environmental problems facing the country — including climate change — and providing general guidance for the management and protection of the environment and the development of environmental action plans. The revised Plan is expected to be governed by the principles of the integrated management approach, human-centred sustainable development, and the sustainable use of natural resources. Public participation is fundamental to the proper management, protection, rehabilitation, and maintenance of the environment. This project will be in line with the revised Plan by adopting an integrated approach to CCA at the watershed level in Eritrea and by supporting human-centred sustainable development in the project target area by addressing the inter-linking issues of climate change, food security, land degradation and water availability.

Draft National Agriculture Development Policy and Strategy (2019)
The Draft Policy and Strategy set the direction for the development of the agricultural sector in conjunction with the Five-Year Strategic Agricultural Development Plan of 2019–2023. The document has not yet been officially released but is practiced as a policy document and is operational in the three major departments of the MoA — AED, RSD, and NARI.

National Adaptation Programme of Action (2007)
The fifth-ranked priority of the NAPA is to address groundwater recharge for irrigation wells. This is applicable to the Tsilima Region, where wells are drying up and groundwater supply for irrigation, livestock agriculture and domestic use is limited. In alignment with NAPA priorities, this project will enhance groundwater recharge and ensure easily accessible water supply through: i) the development of IWRM; ii) the implementation of on-farm and off-farm soil and water conservation measures; iii) the implementation of groundwater monitoring; iv) contributions to food security and poverty reduction; and v) the implementation of a gender-sensitive sustainable strategy for coping with climate change. In addition, this project will encourage afforestation — in line with the fourth-ranked priority of the NAPA — to facilitate the restoration of degraded watersheds and control run-off and loss of arable land from soil erosion. In addition, individual households will be encouraged to plant trees for their own use, which will provide sustainable timber, fruit, and fodder. In alignment with the third-ranked priority of the NAPA, communities will be assisted in the implementation of climate-resilient land-use planning and ecological and agricultural interventions. Finally, gender-sensitive training will be provided to communities on the implementation of such interventions — including how to integrate tree planting and management into their farming systems through agroforestry and silvo-pasture.

National Communications to the UNFCCC
This project is aligned with the Initial National Communication and the Second National Communication by: i) promoting the efficient use of land resources by integrating climate risk considerations into land-use planning and decision-making; ii) empowering local communities with skills to maintain a balance between agricultural production and demands for non-agricultural land uses; iii) strengthening the community-based management of natural resources; and iv) addressing institutional and technical limitations.

Interim Poverty Reduction Strategy Paper
This project is aligned with the Interim Strategy Paper and will support capacity building at the national and sub-national levels for GoSE departments, institutions, and local communities. This project will therefore contribute to the overall objective of the Paper to reduce poverty and improve the standard of living in Eritrea by creating favourable conditions for balanced and sustainable economic growth.

National Action Plan for Eritrea to Combat Desertification and Mitigate the Effects of Drought
This project is aligned with this Action Plan and will address climate change and land degradation by: i) strengthening the institutional capacity for land-use planning; ii) developing community-based land-use and area development plans; iii) implementing agricultural and ecological interventions; and iv) reducing poverty through income-generating activities.

National Biodiversity Strategy and Action Plan
The National Biodiversity Strategy and Action Plan seeks to ensure the provision of ecosystem goods and services and natural resources through the restoration, conservation, and management of Eritrea's biodiversity. This project will support this Strategy and Action Plan through the restoration of degraded watersheds and the promotion of SLM, SFM and IWRM.

Nationally determined contributions

This project aligns with Eritrea's intended nationally determined contributions, set out how the country will address CCA and mitigation to reduce its greenhouse gas emissions. This project will contribute to attaining the following adaptation goals: i) development and establishment of new enclosure areas; ii) production of climate-smart agriculture (CSA); iii) development and promotion of irrigation schemes; iv) afforestation; v) construction of new dams and ponds; vi) rehabilitation of degraded land for agricultural purposes; vii) increased agricultural production — crops and livestock; and viii) implementation of SLM practices.

Sustainable Development Cooperation Framework (SDCF)

This project will be aligned with the SDCF between the GoSE and the UN (2022–2026), in particular SDCF Outcome 4: *By 2026, people in Eritrea have benefited from climate-resilient, sustainable environment and natural resources management.* This project will support this outcome by: i) enhancing the capacities of the national experts and land users responsible for the management, conservation and sustainable use of diverse ecosystems; ii) promoting an integrated approach at the landscape level; iii) embracing ecosystem principles, including livelihood objectives, in the management of ecosystems; iv) mainstreaming gender equality and women's empowerment into environmental and natural resources management; and v) strengthening the capacity of national institutions to mainstream climate-risk considerations into the management of water resources and food production. The knowledge generated by this project will be used to inform policy- and decision-making at national and sub-national levels, which will reduce the vulnerability of the local communities to the effects of climate change.

UN's Sustainable Development Goals (SDGs)

This project will contribute to several SDGs, in particular SDGs 2, 5, 6, 13 and 15. Outcome 2.3 of the project specifically addresses increased food production, directly contributing to SDG2 (*End hunger, achieve food security and improved nutrition and promote sustainable agriculture*). Outcome 3.1 contributes to SDG5 (*Achieve gender equality and empower all women and girls*) through directed capacity building for equal participation and the equitable sharing of benefits from the implementation of project interventions. Outcomes 1.2 and 2.2 directly contribute to SDG6 (*Ensure availability of and sustainable management of water and sanitation for all*) by supporting the implementation of Eritrea's IWRM Action Plan. As a CCA project, the entire strategy is geared towards combatting the impacts of climate change, therefore contributing to the achievement of SDG13 (*Take urgent action to combat climate change and its impacts*). The project also contributes to SDG15 (*Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*) through the implementation of watershed restoration and management using soil and water conservation measures at landscape level. By design, the overall project strategy also contributes in direct and indirect ways to the achievements of SDG 1 (*End poverty in all its forms everywhere*).

III. STRATEGY

This project's main strategy is to integrate adaptation measures into ecosystem restoration and agricultural production systems to address climate change in Eritrea — in the Tsilima plain and its upper catchment— and secure the benefits of the NFSS and IWRM Action Plan. The adoption of an integrated approach to CCA at the watershed level is the preferred solution to: i) increase the availability of natural resources through the restoration of the degraded watersheds; ii) safeguard agricultural productivity under climate change; and iii) address the interlinking issues of climate change, food security, land degradation and water availability. This project will provide local government and communities with practical tools, technologies, and capacities for an integrated approach to CCA.

In the baseline scenario, climate change poses a threat to ecosystem services, agricultural productivity, and the livelihoods of communities in the Tsilima plains and its upper catchment Decreased precipitation, shorter and more intense rainy seasons and increased temperatures — brought about by climate change — promote the runoff of surface water and increase the rate of evaporation. The resulting reduction in groundwater recharge negatively impacts water resources in the Tsilima Region. Without the LDCF alternative, the effects of floods and droughts, increased soil erosion and decreased soil fertility will continue to threaten agricultural productivity, the viability of the livestock and forestry industries and the resilience of communities in the Tsilima plain and its upper catchment. In this baseline scenario, progress to poverty reduction and socioeconomic development in the Tsilima plain and its upper catchment will be hampered.

To address these baseline challenges, this project will pilot the implementation of an ecosystem-based approach to CCA in sub-*zoba* Dbarwa. The LDCF alternative is designed to strengthen the technical and institutional capacity of the national government, *zoba* and sub-*zoba* administration and local communities so that climate change risks can be addressed. Increased capacity at the level of national government will allow the mainstreaming of climate change considerations into sectoral policy planning and decision-making. The strengthened capacity of regional administrations will result in the effective integration of climate change risks into regional land-use and development planning and natural resource management. The implementation of an integrated approach to CCA will have local-level benefits for communities and ecosystems in the Tsilima plain and its upper catchment. The reversal of watershed degradation — by reducing the rate of agricultural expansion into ecologically sensitive areas — will improve the functioning of natural ecosystems. Enhanced ecosystem services such as food production, water quality and availability and firewood production will safeguard the productivity of existing agricultural areas, allow for the better management of climate shocks and the availability of natural resources at the watershed level. In addition to reducing pressure on natural resources exploited by traditional livelihood practices, the identification of climate-smart alternative livelihoods will diversify household incomes and lessen the burden on ecosystems, ultimately increasing the resilience of rural communities to climate change and reducing poverty. During this project, 9,000 ha of degraded watershed and ~17,000 households — an estimated 74,416 people, of which 35,848 are women and 38,568 are men — will benefit directly through participation in the implementation of the project's agricultural and ecological interventions. Strengthening the resources on which communities depend through improved land management practices safeguards household income and makes ecosystems less prone to — and in a better position to recover from — floods and droughts. A community-based early warning system (EWS) piloted in sub-*zoba* Dbarwa will aid local communities in their response to floods and droughts, preventing loss of life, injuries, and damage to property.

In Eritrea, women living in rural areas carry the heaviest burden in terms of providing their households with basic environmental services. For example, the scarcity of wood or other biomass in Eritrea makes life particularly hard for women who are required to spend up to a day — compared to three hours a decade ago — searching for and collecting enough fuelwood to meet the household's needs. In addition to collecting fuelwood, women in Eritrea are responsible for obtaining freshwater for household use from naturally occurring springs, streams and rivers, lakes, wells or boreholes. This process can take up to three hours a day and expend a third of women's daily food intake[11]. The management of assets and resources is a key role of women in Eritrean households and places great stress on them — particularly during droughts[12]. Social factors — including the gender divisions in labour and power relations and

[11]GoSE. 2006. NCNSA for Global Environmental Management in Eritrea.

[12] Tesfamariam, Y. Gender and Vulnerable Groups: A Case Study of Eritrea. Presented at *'The 9th International Conference on Community-Based Adaptation' (CBA9) Nairobi, Kenya, from April 24-30, 2015.* Available at: https://www.weadapt.org/system/files_force/ yoranos_tesfamariam.pdf?download=1. Accessed on 23 May 2016.

gender issues in agricultural institutions and culture — result in discrimination of rights and access to resources[13]. As key providers in their households, women are intricately involved in environmental protection and are taking the lead in this regard in Eritrea. In this context, women are responsible for transmitting value systems to the upcoming generations. A particular focus of the project will therefore be on awareness and training of women's associations and the production of gender-sensitive educational materials. The involvement of the National Union of Eritrean Women (NUEW) during project implementation will ensure that gender issues are appropriately addressed and that women, and particularly women-headed households, are: i) involved in all decision-making processes, such as in the identification of drought- and flood-prone areas, the development of community-based land-use and area development plans and the redistribution of land; ii) encouraged and assisted to become involved in alternative income-generating livelihoods (to be implemented under Component 3) to assist them in securing household food requirements; and iii) supported by mainstreaming gender issues into community-based land-use and area development plans, national development plans, in particular the NFSS and IWRM Action Plan, and sectoral legislation. In so doing, this project will build the capacity of women to adapt to climate change. For example, support will be provided for the identification and implementation of alternative livelihood activities and community-based organisations (CBOs) will be strengthened to provide equal adaptation benefits for both women and men. Moreover, gender and youth action groups will be consulted when public awareness campaigns are designed and training courses on environmental issues are organised. Training manuals will be prepared in the local language and information will be presented in an easily accessible form to ensure that the illiterate, young and old also receive the information. These consultations will ensure that information reaches women stakeholders in their networks and that they also benefit from the best practices and lessons learned during project implementation.

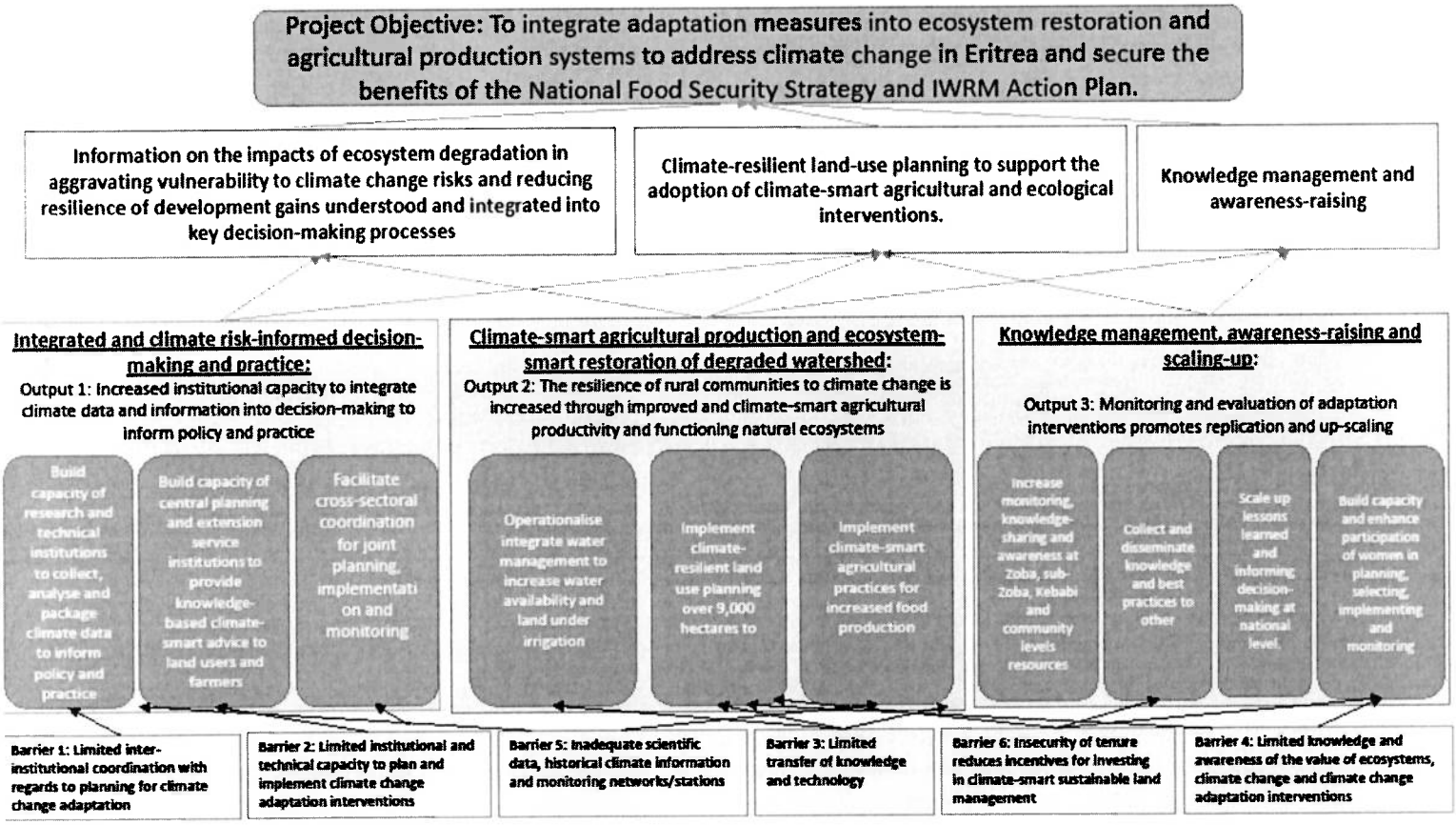
In the LDCF alternative, the monitoring and evaluation (M&E) of CCA interventions and the EWS will promote replication and upscaling that will yield benefits across Eritrea. The preferred solution includes the establishment of a comprehensive system for monitoring and evaluating the applied interventions, which will be collated on a central platform so that information can be disseminated to all relevant GoSE departments and institutions. The result will be an efficient national programme that coordinates CCA interventions across Eritrea, supported by a strong governance framework and a comprehensive body of scientific knowledge. The knowledge generated by project activities — including assessments of groundwater and surface water resources — will: I) strengthen the technical capacity of local and national government staff to analyse, predict and respond to climate change, assess policy-relevant data and deliver timely information to local communities; and ii) enable the establishment of a groundwater monitoring strategy that can inform climate-related research, land-use planning and adaptation interventions. The LDCF alternative will therefore promote inter-ministerial coordination and collaboration between different levels of government, research and academic institutions, donors and non-governmental organisation (NGOs) to advance CCA at the national level.

[13]Ibid.

The LDCF alternative has been designed to align fully with Eritrea's national priorities identified under the UNFCCC and with Eritrea's CCA-related needs to address the country's sensitivity to climate change risks — also in the degraded upstream river areas in the mountain ecosystems of the Tsilima plain and its upper catchment. This project will contribute to broader national objectives, such as the improvement of water availability and food security and addressing vulnerability to land degradation, poverty, and climate change. By ensuring environmental sustainability (SDG 7) through improved environmental management and CSA practices, 9,000 ha of land will be restored and better managed for the benefit of local communities. This project is aligned with the following LDCF objectives: i) CCA-1: *Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level*; ii) CCA-2: *Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level*; and iii)CCA-3: *Adaptation technology transfer: Promote transfer and adoption of adaptation technology.*

The theory-of-change diagramme outlines how this project will address the barriers (see **Barriers**, Section II) while contributing to the preferred solution through the delivery of Components 1, 2 and 3.

Figure 1. Theory-of-change diagramme showing how this project will address the baseline situation in Eritrea and achieve the overall project objective of mainstreaming climate considerations.



IV. RESULTS AND PARTNERSHIPS

Expected results:

The LDCF funding requested by the GoSE will be used to secure the gains of the NFSS and IWRM Action Plan in the Tsilima Region under changing climatic conditions. This will be achieved through six integrated and complementary outcomes. Outcome 1.1 will increase the technical capacity of research institutions to undertake climate-related research. Outcome 1.2 will increase the technical capacity of extension staff to provide knowledge-based advice regarding climate-smart extension services. Outcome 2.1 will enhance the security of land tenure for local communities living in the Tsilima Region who are subject to the *diessa* land-tenure system. Outcome 2.2 will improve the availability of water through the implementation of watershed restoration measures and the adoption of an IWRM approach. Outcome 2.3 will enhance agricultural productivity — and ultimately food security — through the implementation of CSA technologies and methods. Outcome 3.1 will increase monitoring, knowledge sharing and public awareness of the impacts and risks of climate change in the Tsilima plain and its upper catchment at both *zoba* and sub-*zoba* levels. Both CSA and IWRM measures that reduce the vulnerability of local communities to climate change will be identified and integrated into the NFSS and IWRM Action Plans. These will inform the upscaling of CCA interventions throughout Eritrea.

At the national level, this project will strengthen the climate information and monitoring system through: i) investments in the hydro-meteorological monitoring network; and ii) capacity-building for an EWS. This project will also enhance institutional capacity and improve coordination for CCA at an inter-ministerial and institutional level. This will occur through the establishment of an information-sharing network and platform, which will strengthen adaptation planning by increasing access to information, technical support, and knowledge.

At the local level, this project will increase the resilience of communities living in the Tsilima plains and its upper catchment area by implementing an ecosystem-based approach to CCA. On-the-ground interventions will be complemented by building the capacity of local communities to design and implement CSA, livestock practices and land-use and area development plans. Moreover, the interventions will increase household income through the promotion of alternative income-generating activities and the diversification of livelihoods.

Component 1: Information about the impacts of ecosystem degradation in aggravating vulnerability to climate change risks and reducing the resilience of development gains understood and integrated into key decision-making processes.

Co-financing amounts for Component 1: US$718,500
LDCF project grant requested for Component 1: US$1,162,840

Without LDCF financing
Environmental concerns have historically been given low priority in Eritrea in terms of research, policy, and strategic planning. Limited funding for research and training — combined with inadequate equipment and facilities for research on climate change and extension services — have affected the capacity of relevant institutions to research, develop and implement CCA interventions. There are few experienced scientists, research and technical staff in Eritrea and similarly low numbers of specialised training programmes on climate change. Despite Eritrea's investments in higher education in the environmental sciences, most of theme teorology and climatology graduates lack practical experience. Government departments and institutions — including the MoLWE, MoA, and NARI — therefore require training and capacity building to support climate-related research and knowledge-based extension services.

Most technical staff and extension agents do not have the necessary skills or knowledge to support and advise farmers on coping with the impacts of climate change. At present, there are no systematic programmes or plans for updating the skills of extension agents to keep them apprised of new developments in the science and practice of CCA. Furthermore, technical packages promoted to farmers are generic and take minimal cognisance of the differences in environmental and other conditions between the numerous agro-ecological zones. Apart from generic technical publications, extension agents have little else in the way of informative material and extension aids to support their work and effectively inform farmers of innovative approaches to farming. New and improved agricultural technologies

— stemming from research and international best practices — are therefore not currently available to farmers in Eritrea.

The shortage of human resources in research institutions and the extension services — compounded by the limited availability of information, basic facilities, and equipment —constrains agricultural development and growth. Food security in Eritrea, particularly from rainfed agriculture, requires the reorientation of research and extension services to support smallholders boost their agricultural productivity. Moreover, livestock extension services[14]— particularly concerning animal healthcare — are virtually non-existent other than as support to intensive management systems. This threatens the health of livestock and, ultimately, farmers' livelihoods in the Tsilima Region.

With LDCF financing
This project will support the institutions and departments spearheading the implementation of the NFSS and IWRM Action Plan to increase their capacity for researching, developing, and implementing CCA interventions. In particular, the project will focus on building the technical and scientific capacity necessary to inform the development and implementation of such interventions. For example, research into CSA could contribute to increased agricultural productivity by developing drought-tolerant and short-maturing crops. The research capacity of institutions will therefore be enhanced through the provision of equipment and the training of research staff. Furthermore, the project will identify and increase NARI staff's and extension agents' opportunities for exposure, education, and experience in climate-related fields of research.

As the climate changes, so does the role of agricultural research, advisory and extension services. The predicted increase in rainfall variability and frequency of droughts and flooding in Eritrea requires a national effort to integrate climate risks into extension packages. Under Outcomes 1.1 and 1.2, the project will reorient extension services and research to addressing climate risks. Based on the information generated and capacity-building activities undertaken under Outcome 1.1, the project will enable extension agents to provide knowledge-based advice to farmers on how to adapt to climate change. The timely dissemination of such advice — as well as early warnings — will enhance the decision-making abilities of farmers and reduce their vulnerability to climate change.

This project will support the MoA's AED to revise the current extension strategy and approach to focus on establishing working partnerships with local farmers. It is recognised that the current approach of the extension services does not facilitate a mutual and sustained learning process. The role of extension services will be to facilitate the learning process in which farmers —and researchers, extension agents and input suppliers — are active participants rather than mere recipients of technologies and methods for CCA. The proposed participatory approach will require a shift in the role of extension agents from teachers to facilitators. This will be achieved by: i) establishing networks and linkages with other organisations; ii) continually revising extension packages to ensure that they are in line with current research findings and developments in the field of CCA; and iii) training institutional staff to familiarise them with the new extension packages.

The updating and reorienting of extension services will result in technical staff and extension agents receiving knowledge and training on the necessary skills, tools, and technologies to implement CCA interventions. In addition, the operational capacity of the extension services will be boosted to enable local communities in the Tsilima plains and its upper catchment area to mainstream climate change considerations into the implementation of baseline initiatives. Technical staff and extension agents will also engage with the local communities in the design and implementation of CSA and watershed restoration measures. In combination with awareness-raising campaigns under Outcome 3.1, effective advisory services, and the closer involvement of extension agents in training, demonstrations and field activities will foster wider acceptance of CCA interventions. Consequently, these actions will also ensure the sustainability of the interventions beyond the duration of the project.

In summary, this outcome will strengthen the skills and decision-making capacity of institutions to promote the integration of climate change considerations into the selection of adaptation interventions and land-use planning at

[14]Support services include regional veterinary laboratories at *zoba* level and animal health centres at sub-*zoba* level. The animal health centres have no basic laboratory equipment and chemicals to undertake basic diagnosis. At both *zoba* and sub-*zoba* level, public veterinary services are under-resourced. Disease surveillance is not functional and vaccination campaigns are incomplete because veterinary drugs are limited.

both the national and local levels. The project will therefore contribute to reducing the vulnerability of local communities in the Tsilima plains and its upper catchment area in sub-*zoba* Dbarwa.

Further details on the outcomes, outputs and indicative activities for Component 1 are provided below.

Outcome 1.1: Capacity of research institutions to undertake climate-related research increased.

Output 1.1.1: Capacity and resource needs assessment undertaken, and capacity development strategy and training programme developed and implemented for NARI, including training on climate change and IWRM and on research and data collection, analysis and the packaging or publication of information.

This project will support NARI in undertaking comprehensive gender-sensitive capacity and resource needs assessments to identify institutional and human-capacity gaps in the planning and implementation of CCA interventions. A rapid capacity assessment was conducted for NARI during the PPG phase (see **Annex 17**), which points to substantial capacity constraints in NARI. This means that building NARI's full capacity will require more than this project is able to support in terms of both time and resources. The project will therefore support a comprehensive assessment that will assist in the identification and prioritisation of capacity needs — including needs to conduct research on climate change issues. In addition, opportunities will be identified for the integration of climate change information into decision-making on future research directions. Based on the outcomes of the capacity needs assessment, a short-, medium- and long-term strategy for gender-sensitive capacity development and training programmes will be developed. These capacity-building activities will strengthen institutional and technical capacity to undertake climate-related research and improve the research-extension-farmer linkage.

Indicative activities under Output 1.1.1 include:

- **1.1.1.1.** Undertake a capacity and resource needs assessment to identify gaps in staffing, skills, and facilities in NARI for addressing climate change.
- **1.1.1.2.** Develop and implement a capacity development programme to bridge the capacity gaps identified in the above assessment through on-the-job-training and by engaging with local researchers on climate change.
- **1.1.1.3.** Provide technical and financial support to NARI based on the results of the assessment.

Output 1.1.2. Network and information-sharing platform on CCA and CSA developed at national, *zoba* and sub-*zoba* levels.

This project will enhance coordination and linkages between stakeholders by establishing a network and information-sharing platform to facilitate cross-sectoral dialogue on climate change issues. The purpose of this cross-sectoral forum/committee will be to facilitate dialogue between research and academic institutions, relevant line ministries, development partners, national civil societies, NGOs, and CBOs. The platform will therefore be an intermediary between researchers and decision-makers, translating scientific knowledge into practical guidance for decision-makers and strengthening the mechanisms generating and disseminating climate information. This will be achieved by: i) strengthening of the existing ICU at NARI; ii) strengthening the Agricultural Strategic and Information System (ASIS) of the MoA; iii) supporting the farmer field school (FFS) approach of the MoA; and iv) establishing and/or reinforcing linkages with international institutions working on CSA and related research.

This project will strengthen NARI's ICU by increasing the number of trained personnel, improving their mobility to project implementation sites, and introducing incentive measures for the documentation of local knowledge, risks, and vulnerabilities at the village, *kebabi* administration and sub-regional levels. The ICU will focus on documenting local observations on climate change, climate risks and vulnerabilities, monitoring and documenting: i) NARI's research studies and findings; ii) the delivery of extension services; and iii) the CCA and CSA measures implemented under this project and other CCA initiatives in Eritrea.

This LDCF -financed project will strengthen the ASIS — which replaced the National Food Information System after institutional reshuffling of the MoA in 2019 — at the national level to address the lack of specific information on: i) climate change risks: ii) climate risk information generation and monitoring; iii) crop production estimates; iv) household food security and nutrition; v) flood relief management; and vi) market transparency. At the *zoba* administrative level, ASIS committees will be established and strengthened to facilitate the development of a community based EWS under Output 1.1.4.

Under the AED, the MoA has established an FFS approach that has not yet been fully implemented because of limited technical capacity. In the FFS approach, farmers receive hands-on training in small groups through practical demonstrations, field observations and experimentation. The FFS approach is designed to be a farmer-led, village-based system with extension staff working directly with groups and associations. Through the FFS approach, extension agents will receive technical advice and support from specialists stationed at MoA branches at the sub-*zoba* and *zoba* levels to facilitate farmer-led training. With extension staff stationed at sub-*zoba* level, the *kebabi* administrator, village agricultural committees (VACs)and Village Contact Farmers (VCFs) will be actively engaged with agricultural extension services. As a result, these stakeholders will be directly involved in the development, implementation, M&E of options for CCA in farming systems. The FFS approach will empower farmers by actively involving them in decision-making, co-financing, and co-ownership of adaptation interventions. A successful FFS approach requires strong linkages between researchers and extension agents and the establishment of a village database, which will be enhanced by the active involvement of farmers in the FFS groups at *zoba* and sub-*zoba* levels. At the village level, VCFs and village representatives will be identified to coordinate and facilitate farmers' field experimentation and learning.

Linkages between research institutions and extension services will be strengthened to engage with extension services, as well as by the regular participation of researchers in extension work. Local communities will play an active role in conducting research on the ground. For example, through the FFS approach, trials will be conducted on farmers' fields instead of in research institutions. The project will also encourage farmers and others trained in agricultural development to become more involved in identifying research priorities. This approach will promote wider stakeholder involvement, which will take into consideration both traditional and scientific knowledge.

Indicative activities under Output 1.1.2 include:

- **1.1.2.1.** Establish a platform for dialogue between research institutions, relevant line ministries and extension services — including the NARI, MoLWE and MoA — in *zoba* Debub and sub-*zoba* Dbarwa's administrations. The platform will be used to: i) share information about past, ongoing and planned CCA and natural resource management interventions in Eritrea; ii) coordinate existing CSA practices and soil and water conservation measures; iii) improve the design and alignment of future CCA interventions and sustainable land-use and management practices; iv) identify and address the barriers to scaling up successful interventions and approaches in Eritrea; and v) facilitate interactive dialogue with communities to discuss community needs and coordinate service delivery where relevant.

- **1.1.2.2.** Organise periodic gender-sensitive capacity development and knowledge-sharing sessions with staff, local institutions and farmers on the effectiveness of CCA interventions, food security, IWRM and climate change, as well as mandate researchers and academics to: i) present study papers, research results and lessons learned; and ii) produce publications that inform policy- and decision-making processes to ensure that climate change is considered on a national and regional level.

- **1.1.2.3.** Facilitate NARI's linkages with international organisations and access to research information by: i) subscribing to written and electronic bulletins published by international research institutions and to internet-based research portals; and ii) participating in or attending regional forums, workshops, research internships and exchange visits.

- **1.1.2.4.** Provide technical and financial support for the: i) strengthening of the existing ICU at NARI; ii) strengthening the ASIS of the MoA; iii) support of the FFS extension approach of the MoA; and iv)

establishing and/or reinforcing of linkages with international institutions working on CSA and related research.

Sub-activities will include:

- **1.1.2.4.1.** Strengthen NARI's ICU through training, resources, equipment and incentive measures to fulfil their mandate of documenting and sharing information. Documentation and dissemination of information by the ICU will be achieved by: i) organising gender-sensitive local-level awareness-raising campaigns and training programmes for farmers on lessons learned and best practices of CCA; ii) establishing a good practice database, including traditional practices relevant to agriculture, livestock, water management and disaster risk reduction under climate change conditions; iii) promoting the establishment of model demonstrations at the NARI research centres by involving local communities to showcase relevant good practice examples of CCA and disaster risk reduction; iv) organising periodic gender-sensitive capacity development and knowledge-sharing sessions with staff, local institutions and farmers on the effectiveness of CCA interventions; and v) disseminating tested good practices and lessons learned on CCA.
- **1.1.2.4.2.** Establish strong linkages and partnerships under the FFS approach through: i) on-farm trials, field days, demonstrations and participatory surveys; ii) regular meetings to review performances, identify problems, allocate roles and responsibilities and plan and coordinate the uptake of technology; and iii) the identification and selection of VCF and village representatives.
- **1.1.2.4.3.** Coordinate the roles of VCFs and village representatives to assist extension agents. VCFs will assist extension agents at sub-*zoba* level to gather information and assess farmers' needs in line with the FFS extension approach. They will: i) act as a liaison between extension agents and farmers; ii) assist with the establishment and management of demonstration plots for CSA technologies; iii) participate in meetings and discussion groups; and iv) assist in obtaining CSA inputs. Village representatives will assist VCFs at the *kebabi* level to: i) gather information and assess farmers' needs under changing climatic conditions; ii) carry out field demonstrations of CSA technologies; iii) provide information and feedback to VCFs on the effectiveness of CSA technologies; iv) routinely monitor and assess the performance of project activities implemented in villages; and v) forward information to extension agents at sub-*zoba* level.

Output 1.1.3: Technical and financial support provided to NARI in association with other academic and research institutions to conduct research and produce research reports on CSA and production systems, including but not limited to: i) drought-resistant and early-maturing crops; ii) sustainable water-use and conservation practices; iii) conservation agriculture practices, including tillage management and soil fertility; iv) sustainable landscape management; and v) livestock production and grazing management.

This project will support NARI — in conjunction with other academic and research institutions — to undertake innovative and strategic climate-related agricultural research, which will improve climate risk management in Eritrea. The climate-related agricultural research will be supported by sector-specific research to understand the potential impacts of climate change and the effects thereof on agriculture, food security and IWRM. The research results will be used to provide knowledge-based advice to farmers, to inform the MoA's support of the development of the agricultural sector, and through the extension advice institutions, to relay information to farmers and other land users for uptake and adoption. The knowledge and information will be disseminated through the network and information sharing forum to be established under Output 1.1.2.

Indicative activities under Output 1.1.3 include:

- **1.1.3.1.** Develop local-level research capacity by implementing gender-sensitive research and training programmes relevant to CCA in the Tsilima plains and its upper catchment area, together with academic and research institutions, including NARI, MoA, and other international collaborators. These programmes will include local-level resource tracking and M&E activities leading to adaptive management.

  Potential topics for climate-related agricultural research include:
  - Multidisciplinary research to determine the water balance and water requirement of crops. This will be undertaken jointly with other academic and sector institutions — like the Hamelmalo

Agricultural College (HAC), MoA and the Water Resources Department (WRD) of MoLWE — and will focus on the planning and development of small-scale irrigation projects and sustainable agricultural water use and management methods and technologies.
  - Development of drought-resistant and short-maturing crops for rainfed agriculture.
  - Development of disease- and pest-resistant field and horticultural crops.
  - Conservation agriculture practices, including tillage management and soil fertility.
  - Watershed restoration.
  - Agroforestry and silvo-pasture.
  - Livestock production, rangeland development and grazing management.
  - Post-harvest handling, storage, and processing techniques.
  - Non-timber forest products.

- **1.1.3.2.** Facilitate the production and publication of research reports, including preparation of policy briefs.

Output 1.1.4: Climate information and monitoring systems developed in association with relevant line ministries, departments — in particular the MSU of the MoTC and the AMU of the MoA — and local communities based on data received from hydro-meteorological stations installed under Output 2.2.2.

This project will develop national climate information and monitoring systems that will monitor climate data and physical hazards to enhance the understanding of communities at risk. The capacity of hydro-meteorological services and networks to predict extreme weather events — such as floods and droughts— and associated risks will also be enhanced. The improved availability of information — through the establishment and refurbishment of hydrological and meteorological stations under Output 2.2.2 — will form the basis for future monitoring of the impact of climate change. This will include observing, measuring, predicting, and forecasting floods and droughts based on the analysis of the data generated. Furthermore, the project will develop a more effective and targeted delivery of climate information — including flood and drought early warnings in the Tsilima Plains and its upper catchment area— through the development of a community-based EWS.

Data from the national climate information and monitoring system will be collected by various stakeholders and be analysed by the MSU of the MoTC and the AMU of the MoA, which are responsible for transmitting warnings to the local communities via the extension services, email, radio, and other means of communication. The provision of seasonal forecasts and early warnings will allow farmers to make informed decisions based on the data collected and analysed. These will include the location and selection of *inter alia*: i) CSA technologies and practices; ii) income-generating activities; and iii) ecosystem- and climate-smart watershed restoration measures.

Up-to-date climate change predictions will be incorporated into ongoing development planning in the relevant *Kebabi* Administration Areas (KAAs) of sub-*zoba* Dbarwa to reduce the vulnerability of the local communities, especially vulnerable groups. Priority climate and related risks will be identified through a synthesis of data from the upgraded hydrometeorological stations, community observations, traditional knowledge, and scientific information — including the flood- and drought-prone area maps to be developed under Output 2.2.1. Subsequently, existing livelihood maps for sub-*zoba* Dbarwa will be updated through a community-based planning exercise.

This project will pilot a community based EWS in sub-*zoba* Dbarwa at watershed level to strengthen the adaptive capacity of local communities to receive, analyse and act on warnings generated. Communities that are vulnerable to climate change and disasters will be identified, and the EWS will track key variables at the village level disaggregated by gender, such as water availability, livestock condition, fodder availability, incidents of conflict and health trends — in particular malaria and dengue fever. The information generated through the EWS at village level will be shared with the relevant sectoral stakeholders through the MSU and the AMU and the cross-sectoral platforms to be established by the project and as part of the climate information and monitoring system. The MoLWE and the UNDP will work closely with the NUEW, the Ministry of Health and the World Health Organisation to particularly monitor health-related information and the potential health-related impacts of the project activities. They will monitor a potential increase in vector-borne diseases such as malaria and dengue fever resulting from the increased availability of surface water as a result of the development of water infrastructure. Based on the information generated, activities will be developed to address priority needs and to strengthen traditional coping mechanisms.

Indicative activities under Output 1.1.4 include:

- **1.1.4.1.** Develop and implement a comprehensive gender-sensitive capacity-development programme for the MSU and the AMU to address gaps in skills, training, equipment, and facilities with the help of external entities and international experts.

- **1.1.4.2.** Provide gender-sensitive training on meteorological observation and analysis to the MSU and the AMU and other institutions and stakeholders involved in the collection and gathering of meteorological data. Community members will be trained in household data collection.

- **1.1.4.3.** Provide technical and financial support to the MSU, the AMU and other stakeholders to facilitate the establishment of a community based EWS in sub-*zoba* Dbarwa.
  This will include:
  - **1.1.4.3.1.** Initiating a community-based planning exercise to design an EWS using a sustainable livelihoods approach to update and expand existing livelihood maps for sub-*zoba* Dbarwa and to clarify priority climate and related risks.
  - **1.1.4.3.2.** Collating and synthesising community observations, traditional knowledge, and scientific information — including the flood- and drought-prone area maps to be developed under Output 2.2.1 — on climate risks and the impacts thereof on livelihoods.

Outcome 1.2: Capacity of extension service institutions to provide knowledge-based climate-smart extension services to agriculture, livestock production and water management increased.

Output 1.2.1: Capacity and resource needs assessment, development and training programmes implemented in institutions involved in extension services on *inter alia* sustainable land, forestry, and water resources management.

A rapid capacity assessment conducted for the AED of the MoA indicated little to no capacity for the provision of climate-smart advice (see **Annex 17**). Significant investments therefore need to be made for this department to be able to fully deliver on its mandate. A more comprehensive assessment of the gaps in capacity will be conducted and a response strategy put in place. This project will address the aspects of the identified capacity gaps by providing technical support to extension officers at the *zoba* and sub-*zoba* levels for the coordination and supervision of the project's CCA interventions. Based on the outcome of the capacity and resource needs assessment that will be conducted, a gender-sensitive capacity-building programme will be developed targeting sub-*zoba*-level subject matter specialists — particularly staff in the Agriculture and Land Division. Existing training protocols and programmes will be updated based on the needs assessment and international best practices related to CCA. The training and capacity-building activities will include long-term climate change projections in the design, implementation, and maintenance of CCA interventions. Various innovative approaches for the design and implementation of both ecological and agricultural interventions will also be included in the training. In addition, technical assistance will be provided for in-service and on-the-job training for staff at both *zoba* and sub-*zoba* level.

Indicative activities under Output 1.2.1 include:

- **1.2.1.1.** Conduct a needs assessment for CCA training. This will be initiated and coordinated by MoLWE and MoA following its standard procedures. The needs assessment will include: i) a stock-taking exercise to identify existing training materials on CCA in Eritrea; ii) an assessment of the types of training required to build *zoba* and sub-*zoba* capacities; and iii) the collection of gender-disaggregated data to inform tailored training programmes and support.

- **1.2.1.2.** Provide financial and technical support, including equipment and facilities identified as limited in the capacity and resource needs assessment. Examples of equipment that may be required include computers and associated software, audio-visual equipment, GPS equipment, topographic survey

equipment and software. Technical support will include enhanced internet connectivity and communication facilities, which will promote e-learning, access to knowledge and information sharing.

Output 1.2.2: Extension packages reviewed and updated to include best practices and other relevant materials through the provision of technical and financial support at national, *zoba*, sub-*zoba* and *kebabi* levels.

This project will assist the GoSE to review and update extension packages and refine strategies and policies for technology dissemination. All updates to the extension packages will ensure that the integration of technologies — such as CSA — will be sustainable and remain within the bounds of the resource constraints of government, as well as respond to the needs of smallholders, vulnerable communities, and vulnerable groups. The revised extension packages will be coordinated and facilitated by the strengthening of the FFS under Output 1.1.2, which will promote an integrated crop and livestock service and introduce the use of VCFs to alleviate pressure on extension agents.

Extension agents will receive gender-sensitive training on up-to-date methods for integrated natural resource management (INRM), focussing on agricultural and ecological interventions. The agricultural interventions will include: i) CSA and livestock production; ii) integrated crop-livestock production systems; iii) conservation agriculture; iv) agroforestry; and v) sustainable water use and management — including irrigation technologies. The ecological interventions will include: i) soil and water conservation; ii) rangeland management; and iii) watershed restoration. Gender-sensitive training will also be provided to extension agents and to relevant stakeholders who will be involved in the implementation of the CCA project. The Agriculture and Land Division's capacity to disseminate and implement improved technologies — integrating climate risks and sustainable water resources management — will also be enhanced through gender-sensitive on-the-job training.

Indicative activities under Output 1.2.2 include:

- **1.2.2.1.** Review and update the extension services package to include aspects that are not covered in the current portfolio and pilot the revised extension services package in sub-*zoba* Dbarwa. The extension services packages will be tailored to the local context with respect to: i) types of extreme weather events; ii) prevailing socioeconomic conditions; iii) environmental considerations; and iv) needs of local communities, especially vulnerable social groups.

- **1.2.2.2.** Train extension agents — both men and women — on the revised extension packages, which will support the transition towards CSA and establish an effective link with farmers from all social groups.

- **1.2.2.3.** Develop a strategy to build technical capacity of the MoA's AED to enable the development and transfer of CSA technologies and livestock production practices.

- **1.2.2.4.** Develop manuals and leaflets as reference materials and guidelines on agricultural and ecological interventions, as well as methods for monitoring the effectiveness thereof, with due consideration of gender-specific challenges. These documents will be produced on an annual basis and be distributed amongst extension agents.

Output 1.2.3: A long-term strategy developed and implemented to monitor and evaluate climate-smart: i) water resources use and management; ii) agricultural practices; and iii) livestock productivity.

Participatory M&E of the implementation of climate-resilient land-use and area development plans — to be developed under Outcome 2.1 — is integral to the success of this project and the continued learning and uptake of best practices that the project will generate. A cost-benefit analysis of the agricultural and ecological interventions will be undertaken to measure the impacts and analyse the effectiveness of such interventions. Tailored training will be provided to community members of all genders, ages and capacities on low-cost, user-friendly biophysical indicators and rural appraisal tools to measure the impacts of project interventions, including use of water resources and the effectiveness of agricultural and livestock practices.

Indicative activities under Output 1.2.3 include:

- **1.2.3.1.** Develop an M&E methodology in pilot areas, taking into consideration biophysical and socioeconomic indicators, and develop performance targets for project interventions.

- **1.2.3.2.** Train community members, extension agents and NARI technical staff on the M&E methods, techniques and indicators, with specific attention to capacitating vulnerable members of these groups.

- **1.2.3.3.** Document processes, implement M&E methodology and synthesise lessons learned and best practices to inform local-level land-use planning and the up scaling of CCA interventions.

Component 2: Climate-resilient land-use planning to support the adoption of agricultural and ecological interventions.

Co-financing amounts for Component 2: US$ 1,500,730
LDCF project grant requested: US$ 7,352,376.

Without LDCF financing
Land in the Tsilima plains and its upper catchment area is under the *diessa* land-tenure system. By transferring user rights every five to seven years, the *diessa* system serves as a disincentive for farmers to make long-term investments on their land. Soil and water conservation measures needed to rehabilitate land, prevent soil erosion, or build up and maintain soil fertility are not being fully implemented by farmers. To reverse this situation and to promote or assure initiative and motivation among beneficiaries and producers, the GoSEis gradually implementing the 1994 Land Proclamation, which provides security of tenure. However, this effort is challenged by a shortage of qualified staff, mapping equipment and software — including GPS and GIS — to undertake scientific classification and mapping of individual parcels for land use and redistribution. Current land use planning and development at *zoba* and sub-*zoba* levels do not adequately integrate climate change considerations. The redistribution of land and long-term investments in agricultural land will therefore be implemented without the benefit of appropriate climate-related information. For example, soil and water conservation measures are implemented without an understanding of the impacts of climate change on the productivity of plants and soil or the impact of such measures on the ecosystems themselves. As a result, the agricultural productivity of land and the effectiveness of soil and water conservation measures could be undermined by the predicted effects of climate change —in particular, an increase in droughts and floods.

The availability of water, or lack thereof, constrains the agricultural productivity of land in the Tsilima plains and its its upper catchment area. Groundwater is the most dependable source of water in Eritrea. However, despite sufficient WRD regulations, the digging and drilling of wells are often unregulated as a result of inadequate enforcement. The continuous pumping of water from these sources has led to a decline in water levels— already observed in the Tsilima Plains and upper catchment area. The WRD is responsible for undertaking a comprehensive national water resources assessment and monitoring for efficient, effective, and sustainable use and management thereof. However, this department requires capacity building — both in terms of human resources and equipment — to enable it to fulfil its mandate effectively. The inadequate human resources and existing spatial and non-spatial information systems have hampered adequate assessments of water resources, data management and data exchange. As a result, the proper planning, development, and sustainable management of Eritrea's water resources are not taking place.

Inadequate knowledge about flood discharges and the sediment concentrations of flows undermines the effectiveness of current ecological interventions — particularly diversion structures and flood control measures. Consequently, diversion structures have been regularly breached and canal networks have been blocked by sediment deposits. These deposits reduce the amount of water that can be diverted, with the overflow contributing to surface flow and subsequent soil erosion. In addition, the dimensions of earth embankments and bunds are insufficient for the retention of the increased surface water. The predicted increase in frequency and intensity of rainfall events under climate change conditions will therefore undermine the effectiveness of these structures.

With LDCF financing
This project will undertake climate-resilient land-use planning in over 9,000 ha of land in the Tsilima plains and its upper catchment area, including the development of community-based land-use and area development plans under

Outcome 2.1. These plans will facilitate the adoption of locally appropriate agricultural and ecological interventions that will contribute to climate-proofing investments through the NFSS and IWRM Action Plan in the agriculture and water sectors. The envisaged interventions will include *inter alia*: i) physical infrastructure to alter riverbanks and beds that should increase infiltration and facilitate the harvesting of excess water during flash floods; and ii) the adoption of CSA and livestock production practices under Outcomes 2.2 and 2.3.

Under Outcome 2.1, this project will support the efforts of the IWRM Action Plan to improve the water resources information database. Water monitoring and the efficient use of available water will be of fundamental importance to the implementation of CCA interventions, including the development of CSA technologies. The efficient, equitable and sustainable management of water resources is generally only possible at the watershed level, in combination with farm- or household-level management practices. Under Outcome 2.2, this project will support the implementation of ecological interventions through a watershed restoration programme covering over 9,000 ha in the Tsilima plains and its upper catchment area. The ecological interventions will be aligned with the community-based land-use and area development plans to reduce watershed degradation through the implementation of afforestation/reforestation and on-farm and off-farm soil and water conservation measures. Ground water recharge will be enhanced through the: i) development of water harvesting and storage structures — such as flood control and water-spreading facilities — along the river system; and ii) construction of sub-surface dams. Furthermore, the development and implementation of supplementary irrigation schemes will improve agricultural productivity. The ecological interventions will entail simple, farmer-friendly structures — such as earth embankments and furrows — using locally available materials. Such structures are easy to construct and can be operated and maintained by newly established or strengthened CBOs, including water-user groups. Under Outcome 2.3, this project will increase food security through the implementation of climate-resilient agricultural interventions. In addition, by identifying alternative income-generating activities and diversifying livelihoods, the project will improve household income. The extension services — capacitated under Component 1 — will support the development and transfer of a range of CSA and livestock production practices for the benefit of farmers, as well as alternative income-generating activities, including: i) drought and disease-resistant livestock and crop varieties; ii) integrated crop-livestock production systems; iii) conservation agriculture; iv) agroforestry; and v) rangeland management that focusses on conserving native fodder and crop species and varieties, enabling them to be used by small-scale farmers.

This project will implement agricultural interventions, including CSA, at the local level through effective and innovative climate-resilient land-use planning. These interventions will enable local communities to: i) build on their traditional natural resource management knowledge; ii) increase their understanding of the impacts of climate change on their livelihoods and natural resources; iii) address the effects of climate change through the development and adoption of *inter alia* locally appropriate CSA practices; and iv) prepare their own land-use and area development plans.

Intensive training will be provided to *kebabi* administrators and local communities throughout the implementation of the project, focusing on the: i) adoption of agricultural and ecological interventions at the watershed level; ii) the ecological benefits of such interventions for the upper as well as lower catchment and Tsilima Plain; iii) socioeconomic benefits to residents of the Tsilima plains and its upper catchment area, in particular vulnerable groups; and iv) community-based land-use planning and development.

Further details on the outcomes, outputs and indicative activities for Component 2 are provided below.

Outcome 2.1: Climate-resilient land-use planning implemented over 9,000 ha of the Tsilima plains and its upper catchment area.

Output 2.1.1: Based on the assessments undertaken in Output 2.2.1: i) identify and map drought- and flood-prone areas; and ii) develop and implement community-based land-use and area development plans in the Tsilima plains and its upper catchment area.

This project will support climate-resilient land-use planning with the benefit of improved hydro-meteorological information — collected and monitored under Output 2.2.1 — and vulnerability and risk assessments conducted at community levels. Under this output, the project will assist in the development of community-based land-use and area development plans for each of the KAAs in the project area and provide support for the development of national

drought and flood management action plans. Climate risk information and vulnerability and risk perception will inform decision-making on land-use planning and CSA practices. In addition, the hydro-meteorological information and groundwater assessments to be conducted under Outcome 2.2 will support the mapping of current and projected drought- and flood-prone areas and potential shifts in these, to better inform planning. At a socioeconomic level, a Vulnerability Reduction Assessment (VRA)will be conducted to gauge both awareness of climate change impacts and the perceptions of communities and land users about their vulnerability towards the risks imposed by climate change and variability (see **Annex 20**).

Based on the information and maps generated through water assessments (Output 2.2.1), land capability and soil surveys (Output 2.1.4) and community input, community-based land-use and area development plans will be developed for each of the KAAs. To ensure that the watershed is properly utilised and managed, the project will facilitate a participatory decision-making process and continual dialogue between villages. Furthermore, because many farmers are illiterate, the use of visual tools such as community maps and photographs are recommended to encourage community participation in drafting the plans.

Indicative activities under Output 2.1.1 include:

- **2.1.1.1.** Support the development of national drought and flood management action plans.
- **2.1.1.2.** Generate maps identifying flood- and drought-prone areas under climate change conditions that pose a threat to the livelihoods of local communities in the KAAs — based on the improved hydrological and meteorological data and assessments under Outcome 2.2 and guided by the lessons learned from programmes such as the United Nations Convention to Combat Desertification Drought Initiative.
- **2.1.1.3.** Conduct a comprehensive VRA as per the guidance and methodology in *A Guide to the Vulnerability Reduction Assessment*[15] in **Annex 20.**
- **2.1.1.4.** Provide technical and financial support to undertake land capability classification, including soil surveys and soil chemical analyses, ameliorated by information from classification initiatives conducted by the Food and Agriculture Organisation (FAO) and in collaboration with the MoLWE's DoL, NARI, HAC and other institutions with appropriate expertise and facilities.
- **2.1.1.5.** Engage with sub-*zoba* administration, KAAs, extension agents and local communities to assist communities in the development of climate-resilient land-use and area development plans.

Output 2.1.2: Existing CBOs strengthened, including *inter alia* VACs, water user associations (WUAs)and farmer associations to coordinate local-level participation in CCA, land use and development planning.

This project will facilitate the establishment or strengthening of CBOs, which will be actively involved in climate-resilient land-use planning. A bottom-up approach is necessary to ensure that local stakeholders support CCA interventions, are accountable for the results and receive tangible benefits. Technical and financial assistance will be provided to CBOs, including VACs, WUAs and farmer associations, to improve their technical capacities for INRM.

The strengthening of local institutions will include the gender-sensitive sharing of experiences, innovations and knowledge among farmers and enhancing farmer-to-farmer extension. A discussion forum will be developed to allow communities to come together to plan and negotiate agricultural and ecological interventions suitable to the local context at a broader scale — namely at the watershed level. Furthermore, this process will ensure that the activities of adjacent communities do not have an adverse effect on other communities' natural resources, including land, forestry,

[15] Andrew Crane Droesch, Nickey //Gaseb, Pradeep Kurukulasuriya, Andre Mershon, Katiella Mai Moussa, Dale Rankine, Alejandro Santos (2008) **A Guide to the Vulnerability Reduction Assessment: UNDP Working Paper. UNDP Community-Based Adaptation Programme** — see **Annex 20.**

and water resources. An integrated approach to natural resources management under conditions of climate change will therefore be adopted by the local communities at the watershed level.

Indicative activities under Output 2.1.2 include:

- **2.1.2.1.** Provide financial and technical support for the strengthening/establishment of CBOs including VACs, WUAs, farmer associations and Land Use Committees at local level, without perpetuating existing social and economic inequalities.
- **2.1.2.2.** Review existing policy and institutional frameworks and support the implementation and alignment of community by-laws for sustainable land, forestry, and water resources management.
- **2.1.2.3.** Hold gender-sensitive training workshops, including exchange experiences and meetings, wherein diverse stakeholders exchange ideas, provide support to implement and develop by-laws and discuss common problems.
- **2.1.2.4.** Create a gender-sensitive forum for discussions between CBOs of neighbouring KAAs.

Output 2.1.3: Technical support provided to the *zoba* and sub-*zoba* administrations to inform the land redistribution process through the: i) classification and mapping of land according to potential land uses; and ii) assessment of the availability and quality of resources (e.g., soil and water).

This project will provide institutional and technical support to *zoba* and sub-*zoba* administrations for climate-resilient land-use planning. The project will also provide financial support to assess the state of land, forest and other natural resources and quantify the impacts of climate change on these resources and the communities dependent on them in the Tsilima Region. A thorough understanding of the current pressures and constraints on the natural resources in the project area will inform the formulation of land-use and area development plans under Output 2.1.1. Under Output 2.1.3, the project will aid with the mapping of natural resources, as well as the identification of parcels of land for different uses in accordance with the findings of the assessment. This support is designed to facilitate informed decision-making about land allocations under the Land Proclamation, which should be based on resource quality and availability, in particular soil and water. This will complement the traditional allocation of land by committees of villages elders (*baito*), where soil is classified as fertile (*subuh*), moderately fertile (*maekelai*) and marginal (*rekik*). By supporting the Land Proclamation, these activities will result in more secure land rights and the resolution of land disputes and enable long-term investment, improved land husbandry and better environmental conservation. The allocation of land based on scientific information will avoid fragmentation and ensure the establishment of appropriately sized land parcels for various uses, including woodlots, grazing, communal facilities, and housing.

Indicative activities under Output 2.1.3 include:

- **2.1.3.1.** Assess availability and quality of resources through *inter alia* land capability classifications, soil surveys, ground truthing and remote sensing analysis to demarcate individual parcels of land according to resources and potential land use.
- **2.1.3.2.** Hold gender-sensitive training workshops for extension agents and subject matter specialists on GIS skills, land surveying and classification of land for climate-resilient land-use planning.

Outcome 2.2: Integrated water management operationalised across the Tsilima plains and its upper catchment area, increasing water availability and land under irrigation.

Output 2.2.1: Groundwater and surface water resources assessment undertaken and a groundwater monitoring strategy — including a system of data collection and information exchange on water use and projected demand — developed and implemented in the Upper Mereb catchment.

Under this outcome, the project will support the WRD in undertaking comprehensive baseline assessments and monitoring of water resources. Rates of surface water and groundwater abstraction are currently not informed by scientific data, contributing to over-abstraction and the depletion of groundwater resources, particularly in the highlands. The project will improve: i) the knowledge base of water resources; ii) the understanding of the existing and projected demands for water; and iii) the capacity of water management institutions to manage surface and groundwater resources. Information generated by the baseline assessment and ongoing monitoring will inform the management of watersheds and the design of measures to capture, store and distribute water. The project 's activities will subsequently increase the returns on irrigation investments financed through the food security programme implemented by the NFSS.

Indicative activities under Output 2.2.1 include:

- **2.2.1.1.** Undertake a groundwater and surface water resources assessment and develop a groundwater inventory. This will include an assessment of the current and projected water demands for all land uses and purposes such as agriculture, housing, and livestock.

- **2.2.1.2.** Develop comprehensive water development and management plans based on the surface water and groundwater resources assessment.

- **2.2.1.3.** Purchase and install groundwater monitoring and stream gauge equipment, including at least one automatic stream flow and four staff gauges with sediment-sampling programme to monitor the flow and sediment loads of the major streams draining the project areas. The installation will include the drilling of groundwater monitoring wells.

- **2.2.1.4.** Establish and implement a groundwater monitoring strategy for the Upper Mereb catchment and facilitate dissemination of data to WRD, relevant decision-makers and local communities.

- **2.2.1.5.** Review the 2009 IWRM Action Plan to support appropriate responses to climate change impacts on the water sector and mainstream climate risk into IWRM.

- **2.2.1.6.** Provide technical support to strengthen WRD's water resources information database and management. This will include basic data collection and the processing, analysing, and disseminating of information.

- **2.2.1.7.** Develop gender-sensitive water management tools and guidelines for dissemination by WRD to decision-makers and local communities.

- **2.2.1.8.** Provide gender-sensitive training to WRD on the assessment and monitoring of groundwater resources and adaptive management of the water sector in the face of a changing climate.

Output 2.2.2: Hydro-meteorological stations established and/or refurbished at Mendefera, Dbarwa, Halhale, Tala, Dekitsuna, Adi Felesti, Shiketi and Gerteti.

Under this output, the project will facilitate the refurbishment and establishment of hydro-meteorological stations to enable the gathering of climate information — including precipitation and temperature — and the monitoring of seasonal and inter-annual variations in climate. Data on rainfall magnitude and spatial distribution will be collected to underpin the monitoring and forecasting of droughts and floods. Stream flow and run-off estimates will be informed by the installation of stream gauge stations. The data will be collected on a regular basis by trained members of the local communities, extension agents and relevant research institutions such as HAC and NARI. It will be recorded and transmitted to the MSU, AMU and WRD, who will analyse the data and disseminate early warnings and climate forecasts to NARI, MoLWE and MoA under Outcome 1.1. The information provided will enable decision-makers to: i) predict when a drought or flood will occur and the intensity thereof; and ii) inform land-use planning and cropping decisions for the next season. By providing information on water availability, local communities will be able to improve their water-use efficiency and manage their reservoirs and water supplies more effectively.

Indicative activities under Output 2.2.2 include:

- **2.2.2.1.** Purchase and install three new Class 3 meteorological stations in the upper catchment at the Tala, Dekitsuna and villages.
- **2.2.2.2.** Refurbish the existing Class 4 meteorological station at Mendefera to a Class 1 meteorological station.
- **2.2.2.3.** Refurbish the existing Class 1meteorological station at Halhale research station.
- **2.2.2.4.** Refurbish the existing Class 4 meteorological station at Dbarwa to a Class 2 meteorological station.
- **2.2.2.5.** Refurbish the newly established Class 4 meteorological stations at Adi Felesti, Shiketi and Gerteti to a Class 3 meteorological stations.
- **2.2.2.6.** Establish an appropriate communication system to transmit: i) meteorological information to the MSU and AMU; and ii) transfer early warnings from the MSU and AMU to relevant KAAs in sub-*zoba* Dbarwa — including weather forecasts and predictions and seasonal forecasts that will be useful for informing preparedness for floods and droughts and outbreaks of vector-borne diseases such as malaria and dengue fever.
- **2.2.2.7.** Provide gender-sensitive training for technical staff from NARI, extension agents, other relevant institutions and selected community members on data collection and record-keeping.
- **2.2.2.8.** Provide gender-sensitive training to MoA, MoLWE (RD, DoE), MSU and AMU staff on the interpretation of climate information and translation into locally relevant climate forecasts and early warnings.

Output 2.2.3: Climate-smart watershed restoration and management measures identified and implemented, including: i) water harvesting and storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures.

Under this output, the project will implement restoration measures to ensure the recovery and improved functioning of degraded watersheds under future climate change conditions. The implementation of CCA interventions at the watershed level will reduce soil erosion, increase soil fertility, and regulate water flow during flash floods. Such interventions will mitigate the damaging effects of droughts and floods. In addition, watershed restoration and riverbank treatments will increase groundwater recharge and the amount of water available for irrigation. The restoration of degraded watersheds will be supported by the provision of materials and equipment necessary for implementing flood control, water storage and run-off reduction measures.

The list of potential watershed restoration and management measures to be implemented will be developed with explicit consideration of the local socioeconomic and environmental context. Criteria that will be considered in the design of the interventions will include *inter alia*: i) demonstrable effects in reducing the risk of droughts and floods; ii) clear, viable and sustainable benefits to local communities; iii) cost effectiveness; and iv) minimal maintenance requirements. The design will also consider the likely increase in frequency and severity of droughts and floods under climate change. For example, the size of diversion weirs, intake facilities and conveyance canals and the height and width of earth embankments will be designed in accordance with the 50–100-years flood levels. In addition, these measures should include sediment-excluding facilities to handle the potential increase in debris as a result of climate change.

Natural regeneration activities — particularly enrichment planting that introduces valuable species to degraded areas — will be implemented on agricultural lands and rangelands. These activities will be informed by: i) the predicted

effects of climate change; ii) the capacity of species to maintain the provision of ecosystem goods and services under climate change conditions, such as species that are drought- or flood-resilient; and iii) inclusive community needs and preferences. Examples include: i) species that produce non-timber forest products such as fruit, fibre, and fodder; ii) fast-growing species for firewood; and iii) species that promote the growth of other vegetation. Species with multiple benefits will be prioritised to establish an ecosystem that is both climate-resilient and provides additional livelihood benefits. This project will propagate local agroforestry species — including *Faidherbia albida*, *Rhamnus prinoides* (*gešo*), *Moringa oleifera*, *Opuntia ficus-indica* (prickly pear), *Leucaena leucocephala* (river tamarind) and *Senegalia polyacantha* (white thorn tree, formerly known as *Acacia polyacantha*). Most of these agroforestry species are indigenous to the region but some are exotic and need to be propagated with restrictions in mind, including : i) *O. ficus-indica*, which is classified as invasive by the GoSE but can be introduced under certain circumstances — in the home garden as fruit, feed and forage for animals and for firewood, or planted as hedgerows for soil water conservation and as protection around the farm boundary or around hay storage; and ii) *L. leucocephala*, which isa naturalised exotic in Eritrea not classified as an invasive and is highly recommended as an agroforestry species —in particular for animal feed where it is well-recognised for its contribution in increasing milk production. Sites for implementing agroforestry will be identified based on consultations with local communities with a focus on villages with i) small farmlands; ii) small grazing lands; and iii) women-headed households. During the PPG phase (see **Annex 12**), the following KAAs were identified as suitable for implementation in the Tsilima Plain: i) Adi Geda; ii) Adi Bazehannes; iii) Amadir; iv) Teraemni; v) Temajilan; vi) Adbzage; and vii) Adi Logo. The KAAs identified in the upper catchment area include: i) Gerteti; ii) Kisad Daero; iii) Adiketekula; iv) Dektusnea; and v) Zawl.

Indicative activities under Output 2.2.3 include:

- **2.2.3.1.** Provide financial and technical support to WRD to develop and pilot IWM practices in the Tsilima plains and its upper catchment area.
  This will include the following sub-activities:
  - **2.2.3.1.1.** Undertaking site investigations and hydrological analysis of potential locations for the implementation of IWM and soil and water conservation measures. This will include undertaking comprehensive environmental impact assessments for the construction of soil and water conservation measures, particularly sub-surface dams.
  - **2.2.3.1.2.** Implementing approximately six water diversion schemes or small masonry or concrete check dams, with downstream groundwater tapping wells to irrigate over 240 ha of land in the upper catchments of the Halhale, Mereb and Mai-Mogosso rivers.
  - **2.2.3.1.3.** Harvesting floodwater in structures like micro dams to enable irrigation of ~60 ha of rainfed cereal production and rangelands in selected KAAs.
  - **2.2.3.1.4.** Constructing two sub-surface dams that can retain ~600,000 m^3 of water. The exact location of these dams will be determined following comprehensive surface water assessments and completion of the water development plans. Preliminary assessments indicate the following locations: i) Adi Bezehaness and ii) Adi Harbo in the Amadir KAA; and iii) Adi Bana in the Kisad Daero KAA.

- **2.2.3.2.** Promote rainwater harvesting by treating land surfaces to make run-off available for irrigation and other uses. The run-off will be stored in reservoirs to supply water in small fields, while ditches will be used to harvest rainwater from hillsides or gentle slopes where the soil permeability is slow.

- **2.2.3.3.** Develop and implement soil and water conservation measures over 9,000 ha of land in the Tsilima plains and its upper catchment area , including *inter alia*: i) hillside terracing; ii) establishing 300 ha of new enclosure areas and maintaining 200 existing permanent and seasonal enclosures; iii) planting 1.4 million indigenous and multi-purpose trees over an area covering 1,200 ha of degraded land i of the upper catchment area; and iv) incorporating multi-purpose trees in household woodlots and community enclosures.

- **2.2.3.4.** Promote the natural regeneration and reforestation of degraded watersheds through *inter alia*: i) promoting agroforestry by planting ~35,000 seedlings on 600 ha of farmland — 450 ha in the Tsilima Plain and 150 ha in the upper catchment area; ii) using a mix of drought-resistant indigenous and fast-

growing exotic species in community forestry initiatives; iii) expanding enclosure areas; and iv) promoting enrichment planting and indigenous plants to fill gaps.

- **2.2.3.5.** Establish and/or upgrade existing forestry nursery sites in Tera Emni, Mai Tekela and Halhale (NARI).. These nurseries will produce a variety of tree seedlings — including multi-purpose trees and trees with immediate economic value — for planting in enclosures, farms, backyards, and the roadsides of villages.

- **2.2.3.6.** Engage with local communities in the planning and design of: i) water-harvesting and -storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures.

Output 2.2.4: Local communities and households receive gender-sensitive training to undertake sustainable water use and management, including *inter alia* water harvesting and the construction and maintenance of hard and soft engineering interventions.

This project will provide gender-sensitive training to technical staff, extension agents and local communities on the implementation of sustainable water-use and management interventions. The training will be based on the findings of the groundwater and surface water resources assessment (under Output 2.2.1) and the climate-related research (under Output 1.1.3). In addition, the training will cover the construction, operation and maintenance of hard and soft engineering interventions that will be implemented in targeted communities under Output 2.2.3. These will include flood control, water harvesting and water storage interventions.

Indicative activities under Output 2.2.4 include:

- **2.2.4.1.**Provide training to technical staff from the WRD and the MoA — at *zoba* and sub-*zoba* levels— on adaptation techniques and approaches specific to water management, including: i) cultivation of crop varieties with increased resistance to extreme conditions; ii) irrigation techniques that maximise water use; iii) adoption of supplementary irrigation in rainfed systems and water-efficient technologies to harvest water; iv) modification of cropping calendars; and v) efficient use and management of water resources for irrigation.

- **2.2.4.2.** Hold gender-sensitive training workshops for local communities — including farmer-farmer exchanges and visits to demonstration plots — on the construction, operation and maintenance of watershed restoration measures and technologies. Farms selected for demonstration activities will reflect the diversity of farmers, including women.

- **2.2.4.3.** Develop manuals on the operation and maintenance of hard and soft engineering interventions, including flood control measures, water harvesting interventions and soil and water conservation measures. Manuals will include gender-related challenges and solutions.

Outcome 2.3: Increased food production through the implementation of CSA practices across the Tsilima plains and it upper catchment area.

Output 2.3.1: CSA practices — informed by research product generated under Output 1.1.3 and land-use and area development plans prepared under Output 2.1.1 — developed and transferred to farmers, including: i) drought- and disease-resistant varieties; ii) integrated crop-livestock systems; iii) conservation agriculture; iv) agroforestry; v) silvo-pasture; and vi) rangeland and livestock management.

This project will implement CSA practices in the Tsilima plains and its upper catchment area based on both traditional and scientific knowledge. CSA best practices — such as mulching, intercropping with drought- and flood-tolerant crops, crop rotation and changing planting schedules — will be adopted to improve agricultural productivity under current and future climate conditions. In addition, the dissemination of drought-resistant livestock and appropriate

livestock management techniques will complement the environmental and economic benefits of the soil and water conservation measures implemented under Output 2.2.3.

Agricultural productivity will be enhanced by planting trees and shrubs that will increase soil moisture and soil organic matter while diminishing the effects of heavy rains, droughts and windstorms under climate change conditions. By incorporating fodder trees in crop fields, the project will increase the availability of fodder for livestock and reduce dependence on degraded rangelands. Economically important shrubs — such as *Rhamnus prinoides* (*gešo*) — and legume trees with pods — Acacia etbaica, *Acacia polyacantha* and *Faidherbia albida* — will be grown. The promotion of agroforestry in productive agricultural systems will: i) increase food security; ii) reduce the agricultural sector's vulnerability to climate change; and iii) increase the adaptive capacity of local communities in the Tsilima plains and its upper catchment area to climate change.

This project will also provide training to local communities on the implementation of CSA technologies and livestock production practices. A participatory approach to training will be adopted, facilitating learning through *inter alia* organising farmer-farmer exchange visits and visits to demonstration plots.

Indicative activities under Output 2.3.1 include:

- **2.3.1.1.** Identify and implement a range of CSA technologies and methods in and around pilot communities. This will include *inter alia*: i) planting faster-maturing drought- and disease-resistant tree species; ii) promoting integrated crop and livestock productivity systems; iii) promoting conservation agriculture; iv) promoting agroforestry; v) adopting improved rangeland management practices over 1,250 ha of grazing land — including 720 ha in the upper catchment area and 275 ha in the lower catchment area; vi) promoting the conservation of native fodder and crop species; vii) introducing tree-planting campaigns; and viii) promoting rotational grazing, cut-and-carry and reseeding of grasses to promote rangeland productivity.

- **2.3.1.2.** Establish demonstration plots at each of the project intervention sites to demonstrate CSA technologies and methods. Organise gender-sensitive experience-sharing events, where farmers and community members from nearby villages are brought to the demonstration plots.

- **2.3.1.3.** Train extension agents and CBOs to oversee and coordinate local community involvement in the implementation of CCA interventions, CSA technologies and livestock production practices, with specific attention to capacitating vulnerable members of these communities.

- **2.3.1.4.** Train local communities on the implementation and maintenance of CSA technologies and livestock production practices, with specific attention to capacitating vulnerable members of these communities.

Output 2.3.2: Alternative income-generating livelihoods identified and implemented in selected communities.

Support under this output will build on existing government programmes being implemented by the MoA to improve livelihood diversification among households in Eritrea, including the Tsilima Palins and its upper catchment area. The agricultural support packages provided by the GoSE are to promote income-generation as well as food security and improved nutrition.

They include:

- **Dairy cattle for milk production:** To promote access to milk and dairy products — both nationally and at community and household levels — the MoA is supporting selected farmers to integrate dairy production into their livestock production systems. These farmers are encouraged and supported to produce their own forage for feeding their cattle. Technical support is also provided by the GoSE for improved dairy cattle management and cattle health management.

- **Small-stock production**: The MoA supports the production of goats and sheep for meat and other products, as an income-generation opportunity for households and a quick way to earn cash income. Women and women-headed households are particularly targeted as beneficiaries of small-stock agricultural packages. This is largely to support income-generation and livelihood-diversification opportunities, but also to promote access to meat protein and other meat products.
- **Poultry production**: The MoA has a scheme through which it distributes chicks to mostly women-headed households. This programme has benefitted a significant number of households in the Tsilima plains and its upper catchment area. Through this scheme, egg and poultry meat production have become important income-generating activities, increasing household food security, and improving nutrition.
- **Beekeeping for honey production**: Honey production is one of the popular livelihood activities in Eritrea. In the highlands of the country, it is seen as one of the lowest-cost investment income-generating activities for resource-poor farmers — including women, the youth and the unemployed. The Tsilima plains and its upper catchment area is regarded as suitable for honey production. As a highly valued agricultural product, the MoA is supporting farmers by supplying apiculture equipment and facilities such as improved beehives and honey-processing gears.
- **Freshwater fishing**: Fish farming has been already initiated in four small- and medium-sized dams located in the project area under the lead of the Ministry of Marine Resources (MoMR) namely in: i) Misilam; ii) Amadir; iii) Bdho; and iv) Warsay. This is regarded as a viable income-generating activity and an excellent dietary supplement, in particular for women and women-headed households.

Through this project — and in collaboration with the MoA— support for these agricultural packages and other income-generating opportunities will be identified to create off-farm employment and to diversify traditional livelihood practices based on the climate-related research undertaken in Output 1.1.3. Focus will be on processing agricultural products and improving agricultural value chains. Products such as honey have the potential to access international markets if properly produced, processed, packaged, and marketed. The project will therefore identify potential income-generating activities and investigate the conditions necessary for effective local-level adoption, profitability and sustainability. Emphasis will be placed on activities suitable for adoption by women and women-headed households, who are among the most vulnerable to climate change. The project will also promote integrated crop and livestock production in line with the approach of promoting landscape and ecosystem resilience, which in turn will promote the resilience of the agricultural sector and of farming households and communities.

Indicative activities under Output 2.3.2 include:

- **2.3.2.1.** Conduct an assessment to identify the actual beneficiaries of alternative income-generating activities.
- **2.3.2.2.** Identify and implement appropriate and specific income-generating activities.
- **2.3.2.3.** Provide technical and financial support for the identification and implementation of selected income-generating activities — in addition to those supported by the GoSE. Such activities will include the creation of opportunities for off-farm employment through the: i) expansion of irrigated agriculture, dairy and poultry farming and apiculture; ii) introduction of multipurpose tree species to households' tree plots such as *Rhamnus prinoides* (*gešo*), acacias and other fruit trees; iii) promotion of beekeeping; iv) promotion of small stock farming; and v) introduction of freshwater fishing in existing micro dams.
- **2.3.2.4.** Train community members on value-addition activities, including agro-processing and marketing skills, with specific attention to capacitating vulnerable members of these communities.
- **2.3.2.5.** Support access to markets in and outside the Tsilima Region.

Component 3: Knowledge management and awareness-raising.

Co-financing amounts for Component 3: US$70,000

LDCF project grant requested for Component 3: US$197,009

Without LDCF financing
The NCSA recognises that the GoSE has insufficient capacity in relevant line ministries and academic institutions to: i) promote the use of national and global information on climate change research; and ii) develop and implement climate change education, training and public awareness campaigns. Modern database management facilities and skilled human resources to develop and maintain databases are limited in the institutions responsible for CCA and INRM. Consequently, the availability and sharing of baseline data are limited in Eritrea.

Moreover, there is a low level of understanding in local communities about the predicted impacts of climate change in Eritrea and the potential benefits of CCA interventions to reduce those negative impacts. The scarcity of awareness materials and the poor integration of environmental matters into formal education programmes and curricula limit public understanding of ecosystems and result in a weak civil society. This is exacerbated by widespread illiteracy among farmers, making it difficult to disseminate useful information to rural communities using information, education, and communication materials.

The generation and sharing of knowledge on CCA and INRM are limited, which has led to the implementation of less sustainable community livelihood practices. For example, the impacts of unsustainable land-use practices are not well understood by farmers. As a result, unsustainable practices continue to be implemented, posing further threats to ecosystems goods and services. In addition, they decrease the resilience of communities' livelihoods to the impacts of climate change. There are currently no communication or outreach strategies that provide information to stakeholders such as extension agents and farmers. Insufficient information and low public awareness are major challenges that affect the integration of climate change considerations into planning processes at the national and local levels. As a result, CCA is not adequately integrated into new and existing national policies and strategies, and nor are the potential benefits of adopting sustainable measures appreciated by the GoSE and local communities.

Knowledge and awareness of CCA and the associated benefits of building the resilience of communities and ecosystems — thereby improving communities' livelihoods — is likely to remain limited if information on CCA interventions is not shared at all levels. Moreover, the capacity of national and local authorities to facilitate the implementation of such interventions will remain low. This will limit the replication and upscaling of CCA interventions — such as those demonstrated through this project — in other *zobas* in Eritrea.

With LDCF financing
Knowledge exchange and joint learning are integral to the successful development, implementation, and upscaling of CCA interventions throughout Eritrea. This project will promote systematic knowledge sharing among all stakeholders. This will entail promoting education and awareness for mainstreaming climate change considerations at both the national and local levels. By so doing, the project will contribute towards an informed and knowledgeable public committed to the sustainable development of Eritrea under climate change conditions. Support for the implementation of project activities will be generated through public awareness-raising campaigns on the benefits of implementing CCA interventions. These campaigns will rely on various media, including print and radio productions, to disseminate information to the public.

This project will adopt a versatile approach to disseminate knowledge of CSA practices and climate-resilient land-use planning. Under Output 3.1, the project will support the packaging of knowledge and information using locally appropriate and participatory approaches. Training and workshops will be conducted on climate-related information to support the adoption of CCA interventions. The knowledge and information need of vulnerable groups — in particular women-headed households and illiterate farmers — will be identified and incorporated into the awareness-raising programmes.

This project will also implement activities that improve community-level participatory learning, knowledge management and the exchange of information at sub-*zoba*, *zoba* and national levels. This will include continuously monitoring and documenting the effectiveness of the project activities, particularly CCA interventions aimed at enhancing food security and IWRM, through the collection of gender-disaggregated data.

Further details on the outcome, output and indicative activities for Component 3 are provided below.

Outcome 3.1: Increased monitoring, knowledge sharing and awareness at *zoba*, sub-*zoba*, *kebabi* and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) CSA technologies and measures; and iv) sustainable natural resource use and management.

Output 3.1.1: Public awareness-raising and education campaigns conducted in the Tsilima plains and its upper catchment area.

This project will organise a series of awareness-raising events to increase the understanding of rural communities in the Tsilima plains and its upper catchment area on the effects of climate change and potential CCA interventions. The awareness-raising initiatives will make use of *inter alia* local media, best practice guides, drama productions and community radio networks. The campaign will assist in the generation of knowledge products, providing information on: i) watershed restoration and management practices; ii) a cropping calendar for sowing, planting and harvesting times; iii) CSA practices, including drought-resistant varieties of local crops, suitable seed provision and mulch application; iv) water-efficient irrigation technologies; and v) monitoring the related interventions. Farmers and other land users will receive targeted training on best practices and lessons learned. The farmer-training programmes will adopt several experiential learning methods in a 'learning-by-doing' approach, including demonstration plots, farmer-farmer exchanges between communities from different *kebabis*, and field visits and study tours to improve conventional extension methodologies and to publicise project activities, success stories and lessons learned from the implementation experience. The development of an education programme will allow school-level learners to become aware of the benefits of CCA interventions and to participate in related activities from an early age through field days, study tours, school projects and competitions. Lessons learned from the project will also be made available for inclusion in educational curricula. Finally, support will be provided for the development and broadcasting of farmer radio shows, to be aired in different local languages and at various times of the day, that will support the widespread adoption of the interventions promoted by the project.

Indicative activities for Output 3.1.1 include:

- **3.1.1.1.** Conduct a public awareness-raising campaign using local media to inform communities on the effects of climate change, the benefits of appropriate CCA interventions and the appropriate methods for monitoring these interventions, which should include the development and dissemination of easily comprehensible, user-friendly knowledge products in various local languages.

- **3.1.1.2.** Organise local-level awareness-raising campaigns and training programmes for farmers on lessons learned and best practices from the implementation of CCA interventions, with training activities tailored to different genders, ages, and capacities.

- **3.1.1.3.** Arrange awareness-raising sessions — such as seminars, workshops, and competitions — and education campaigns at local schools to teach learners about the benefits of CCA interventions, including a practical aspect in which learners are encouraged to participate in field visits and restoration activities and initiatives such as youth competitions, tree planting and fieldwork.

- **3.1.1.4.** Provide support for the development and broadcasting of farmer radio shows that provide easily accessible and useful agricultural and weather-related information to rural households in various languages and time slots to reach the widest possible audience.

Output 3.1.2: Communication strategy developed and implemented for sharing lessons learned and best practices to: i) other *zobas*, sub-*zobas* and *kebabis*; and ii) high-level decision-making institutions.

This project will develop a communication strategy for replicating lessons learned during project implementation across all administrative levels in Eritrea. The approach will be underpinned by the collation of research and knowledge products generated by the project's activities, best practice information and lessons learned during project implementation. This information on the effectiveness of the CCA interventions in each of the selected KAAs will be collated and disseminated: i) nationally through the information-sharing platform established under Outcome

1.1; and ii) regionally and globally through the UNDP's Adaptation Learning Mechanism and wiki ADAPT, as well as through the Global Adaptation Network and the Africa Adaptation Knowledge Network. Best practices and lessons learned will be shared between farmers during exchange visits between *zobas*, sub-*zobas*, and *kebabis* to: i) inform policy and decision-making on a national level; and ii) influence the implementation of the baseline programmes and projects in other parts of the country. Experience-sharing consultations, strengthened extension services, exchange visits and field visits by policymakers, the Project Board and the Project Technical Committee will facilitate a smooth uptake by policymakers and replication of the project activities elsewhere in the *zoba* Debub and throughout Eritrea.

Indicative activities for Output 3.1.2 include:

- **3.1.2.1.** Develop and implement a communication strategy and action plan for scaling up and replicating project activities and lessons learned throughout *zoba* Debub and Eritrea.

- **3.1.2.2.** Collate and synthesise lessons learned, and best practices based on results from the project indicators, including the benefits of CCA interventions, according to a standardised system for sharing nationally through the information-sharing platform that integrates information from various CCA projects in Eritrea and other regional and global information-sharing initiatives.

- **3.1.2.3.** Establish a good-practice database that includes traditional and project-supported activities.

- **3.1.2.4.** Establish a system to periodically inform decision-makers on best practices and approaches for integrated landscape management that are locally appropriate.

- **3.1.2.5.** Facilitate community consultations with policymakers, the Project National Steering Committee and the Project Technical Committee to support policymakers to review and integrate CCA interventions into the regional development plan, the NFSS and the IRWM Action Plan.

Output 3.1.3: Gender strategy developed and implemented that includes capacity building and enhancing the participation of women in the planning, selection, implementation and monitoring of CCA approaches and practices.

In response to the gender-specific effects of climate change and land degradation on women, men and their households, a gender strategy will be developed that focuses on the: i) the production of gender-sensitive training materials; ii) representation of women in land-use planning and decision-making; iii) inclusion of gender matters in administrative processes; and iv) documentation of lessons learned from gender-specific experiences and coping strategies. This gender strategy will guide the development of future projects and help promote community buy-in and support for project interventions. Women and women-headed households in the Tsilima Region will directly benefit from the project through increased capacity and increased community coordination and ownership.

Indicative activities for Output 3.1.3 include:

- **3.1.3.1.** Develop a gender strategy to strengthen the adaptive capacity of women, men, and their households to prepare for the adverse effects of climate change.

- **3.1.3.2.** Update and extend the portfolio of training modules generated during this project to include gender aspects associated with climate change and land degradation and to tailor training programmes to the local context in the Tsilima plains and its upper catchment area.

- **3.1.3.3.** Collaborate with the NUEW to ensure that women's needs and interests are represented in the: i) preparation of land-use and restoration plans; ii) strengthening or establishment of CBOs; and iii) development of community by-laws, under Outcome 2.1.

- **3.1.3.4.** Support — or, if no such structure exists, create — a discussion forum to facilitate dialogue on gender issues between the CBOs and *kebabi* and sub-*zoba* administrations.

- **3.1.3.5.** Document lessons learned from the experiences and coping strategies of women and men related to the effects of climate change to be shared nationally through the information-sharing platform that integrates information from various projects in Eritrea, for future project and programme design.

Knowledge management:

Knowledge generation and management are strong aspects of this project weaved into all project components. These aspects also receive special focus under *Component 3 — Knowledge management and awareness-raising.*

Project activities — such as land-use planning and the development of appropriate CCA interventions — will take place on site in the Tsilima plains and its upper catchment area. Knowledge will therefore be generated together with farmers, local communities, and CBOs in the KAAs, making knowledge and technology directly accessible to users on all levels. This project will also strengthen technical capacity at local level, thereby alleviating the shortage of extension personnel. In addition, the project will improve knowledge management among targeted institutions and communities by: i) developing climate-resilient land-use and area development plans — through a participatory approach — for use by communities and KAAs; ii) establishing multi-stakeholder forums to facilitate dialogue on CCA, food security and water resources management; iii) providing training to GoSE, CBOs and local communities on appropriate CCA interventions; iv) developing training manuals that target extension agents, farmers and CBOs; v) developing and disseminating awareness-raising materials on CCA in *zoba* Debub and elsewhere in Eritrea; and vi) developing a participatory monitoring and evaluation system for the implemented CCA interventions.

Partnerships:

In the last decades in Eritrea, large-scale public soil and water conservation works and reforestation programmes have been implemented involving farm and community forestry. These programmes have resulted in the protection of about 400,000ha of land in enclosures throughout Eritrea. Building on and in conjunction with completed and ongoing GEF and non-GEF funded projects, these initiatives provide opportunities for synergies and knowledge exchange with the project. The Project Management Unit (PMU)is responsible for coordinating efforts and establishing linkages with other ongoing initiatives in the Tsilima plains and its upper catchment area and elsewhere in Eritrea. The following initiatives are ongoing through the support of other organisations/agencies:

Table 1. Ongoing projects and initiatives in Eritrea

Project/Initiative	Description	Donor-funded project	Government-led initiative
Budgetary allocations over the past several decades to soil and water conservation measures across Eritrea.	This includes: i) establishment of check dams and hillside terracing; ii) building of ponds and micro-dams; iii) initiation of afforestation activities; and iv) declaration of forest enclosures, resulting in an estimated 400,000 ha of enclosures — 214,133 ha of temporary and 185,867 ha of permanent enclosures — throughout Eritrea. Over the last seven years, the area covered by on-farm soil and water conservation practices has been increased from 32,250 ha to 181,565 ha.		X
Budgetary allocations since 2010 to soil and water conservation measures in the Nakfa sub-*zoba*.	Budgetary support to facilitate community mobilisation to build about 73 small water reservoirs, worth an estimated US$2.6million. Investments have also been made to raise awareness of the importance of establishing temporary enclosures to check against and contribute to addressing rangeland degradation. Through these efforts, communities have been able to designate a total of 20,925 ha under temporary enclosures, largely in rangelands. In addition, an estimated US$5,231,520 has been spent on constructing terraces on hillsides over9,965 km and 109,500 m^3 of check dams in areas previously subject to severe surface erosion and degradation. Native and exotic tree species have also been re-established — up to 322,000 trees have been planted in three out of the five *kebabis* in the project site, covering about 161 ha, with a survival rate of 60%–70%.		X

Project/Initiative	Description	Donor-funded project	Government-led initiative
National tree planting campaign.	The GoSE is addressing environmental degradation through social mobilisation in reforestation and soil and water conservation. Training has been provided to religious leaders, students, and other community members on the need for tree planting and environmental conservation as a key strategy to achieve food security. School pupils, communities, individuals, and various institutions are actively participating in this campaign. Since 1991, more than 135 million seedlings have been planted and ~56,000 ha of degraded land rehabilitated. Between 2010 and 2014 alone, more than 18 million seedlings were planted, and 7,230 ha of plantation were established. The GoSE has identified ~72,000 ha for further reforestation. The current project will build on the campaign initiative through Components 2 and 3, whereby on-the-ground interventions will be implemented — including agroforestry — and national awareness campaigns will be rolled out. Close coordination between the projects will ensure increased complementarity and no duplication.		X
Restoring degraded forest landscapes and promoting community-based, sustainable and INRM in the Rora Habab Plateau, Nakfa sub-*zoba*, Northern Red Sea Region of Eritrea.	The objective is to promote landscape restoration by mainstreaming SLM and forestry and biodiversity conservation into land-use planning and agricultural production practices in the Rora Habab Plateau in Eritrea. **Implementing agency:** UNDP **Executing agencies:** Implementing partner (IP): MoLWE Responsible parties: MoA, Ministry of Local Government's (MoLG) Department of Agriculture and Land of the Northern Red Sea *zoba, Ministry of Finance and National Development, Forestry and Wildlife Authority* **Funding source and amount (US$):** Co-financing total: 23,500,000 GEF project grant: 8,260,607 GEF agency fees: 784,757	X	
Building community-based integrated and climate-resilient natural resources management and enhancing sustainable livelihoods in the south-eastern escarpments and adjacent coastal areas of Eritrea.	The objective is to enhance there silience of vulnerable agro-pastoralist and fishing communities along degraded landscapes/seascapes in the south-eastern escarpments and adjacent coastal areas of Eritrea through an integrated ecosystem-based, market-driven approach. The three core project interventions are: i) to enhance the enabling environment for CCA, SLM, SFM and biodiversity conservation for mainstreaming in priority sectors through integrated policies, planning and finance; ii) to promote ecosystem-based SLM, SFM, CCA and biodiversity conservation across the landscape and seascape for sustainable and resilient livelihoods; and iii) to scale up adaptation technologies and innovations in selected value chains — crop, livestock and fisheries — to improve market access and the resilience of supply systems. **Implementing agency:** FAO **Executing agency:** MoLWE **Responsible Parties:** Ministry of Local Government's Dept of Agriculture and Land of the zoba Debub and Northern Red Sea Ministry of Agriculture Ministry of Finance and National Development	X	

Project/Initiative	Description	Donor-funded project	Government-led initiative
	Ministry of Marine Resources Forestry and Wildlife **Funding source and amount (US$):** Co-financing total: 36,405,789 GEF project grant: 15,680,308 GEF agency fees: 1,411,228		
Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa.	The project aims to build communities' resilience to drought and climate change, improve their livelihood and promote regional integration in the Horn of Africa. The project is expected to develop infrastructure for: i) water mobilisation and management; and ii) livestock production, health, and marketing. It will also build the capacity of local populations and governments of the region to better cope with the effects of climate change, resource scarcity and conflicts related to resource utilisation. **Funding source and amount (units of aid):** African Development Bank: 74,982,000 Local governments: 6,685,000	X	

This project will interact with and build on these projects and initiatives, reducing costs, exploiting synergies, and avoiding duplication. This project will pursue an active partnership strategy with other ongoing projects and initiatives and in so doing, will build on lessons learned and best practices from past and current projects. In addition, the project will enhance and make use of existing national and sub-national structures where possible. In this light, project implementation will be almost exclusively undertaken by existing government structures, building on existing governmental initiatives, strategies and policies and the activities of other donor-funded projects where feasible. This project will contribute significantly to bridging gaps in communication and promote collaboration in and between different entities in GoSE. While the MoLWE is the IP, it will work in close collaboration with the MoFND, MoLG, MoA, the MoTC (MSU) and the FWA, as the project's main focus is on watershed restoration for CCA in the food-production sector. Horizontal linkages and collaboration will therefore be strengthened between these central government institutions for better-integrated management of ecosystems and landscapes. The project will strengthen local-level structures, such as resource-user associations and village committees, and work with these as focal centres for delivering services, training, technical advice, and local-level consultations for decision-making and information delivery to the wider community. The partnerships to be formed between these different structures and entities are key to the delivery and achievement of project goals and objectives. The role of the Project Board and the PMU in ensuring that the partnerships work, and the interactions are kept functional is therefore key. UNDP, in its oversight role and as both the Implementing Agency for this project and a development partner to the GoSE, will play a central role in ensuring effective partnerships and will liaise at the highest level with GoSE to ensure that the project delivers the development results as agreed between the GEF-LDCF, UNDP and the GoSE.

Table 2. Co-financing information

Co-financing source	Co-financing type	Co-financing amount	Included in project results?	If yes, list the relevant outputs
GEF	Grant	US$9,050,000	Yes	Components 1, 2 and 3
UNDP	Grant	US$2,500,000	Yes	Components 1, 2 and 3
Ministry of Land, Water & Environment	In kind	US$20,000,000	No	Staff, office space, infrastructure development
Ministry of Land, Water & Environment	Cash	US$5,000,000		

Risks:

In the preliminary screening of the project risks during the project review and gender mainstreaming phase in 2022 (see **Annex 5**), the project was assigned an overall **Substantial Risk** rating. The identified risks and their potential impacts were mainly classified as *low* to *moderate*. However, their cumulative impact, as well as those risks that have

been rated as *substantial* or *high*, necessitated an overall *Substantial Risk* rating. The key risks that can threaten the achievement of the results are mainly related to the low capacity of the duty-bearers and to the implementation of the governance arrangements (Table 3).

Table 3. Summary of risks with a rating of *Moderate*, *Substantial* or *High* (refer to **Annex 5** for a description of all risks associated with the project)

Risk description	Comments	Assessment and management measures
Risk 1: The key institutions in the implementation, management and monitoring of the Project have inadequate capacity (staff, finances, research, communications and information-sharing) to fully meet their obligations as Implementing Partner and Responsible Parties which, if not adequately addressed, may jeopardize the delivery of anticipated Project benefits to stakeholders, and the achievement of Project objectives related to ecosystem restoration, sustainable agricultural production and climate change adaptation. Principle: Human Rights, Question P.2 Risk rating; Substantial	Institutional capacity issues constitute barriers among the implementing institutions in addressing and managing the effects of CC particularly i) limited inter-institutional coordination and communication; ii) inadequate technical and scientific capacity; iii) insufficient human capacities; iv) inadequate funding; and v) inadequate research outputs and training on substantive subjects.	A thorough **review** of the Project Document was conducted in 2022, which included discussions with the relevant institutions to **identify capacity challenges and resource needs.** **Training and capacity building** is an integral part of Project interventions that seek to fill the capacity gaps and resource needs identified during the Project design phase. In addition, during Project implementation a targeted capacity and resource needs assessment of a group of national, regional and subregional public agencies will be conducted. Specifically, the Project includes the following **institutional capacity assessment and development measures**, among others: • Under Output 1.1.1, the capacity of research institutions will be increased, including the conduct of a capacity and resource needs assessment of the National Agricultural Research Institute (NARI), and the preparation and implementation of capacity development strategy and a training program. • Under Output 1.1.2, a network and information-sharing platform on Climate Change Adaptation (CCA) and Climate-Smart Agriculture (CSA) will be developed at national, *zoba* and sub-*zoba* levels, including periodic gender-sensitive capacity development and knowledge-sharing sessions with NARI staff, local institutions and farmers, and the provision of technical and financial support for the strengthening of NARI and MoA's Agricultural Strategic and Information System. • Under Output 1.1.3, technical and financial support will be provided to NARI and other academic and research institutions to conduct research and produce research reports, including the development of local-level research capacity by implementing gender-sensitive

Risk description	Comments	Assessment and management measures
		research and training programs. • Under Output 1.2.1, the capacity and resource needs assessment of institutions involved in extension services will be assessed, and capacity development and training programs will be implemented. • Under Outputs 2.1.1 and 2.1.3, technical and financial support will be provided to the *zoba* and sub-*zoba* administrations to, respectively, undertake land capability classification, and facilitate the process of development and implementation of community-based land use and area development plans. • Output 2.2.4 includes the provision of training to technical staff of the Water Resources Department and the MoA at *zoba* and sub-*zoba* levels on adaptation techniques and approaches specific to water management. Under Outcome 3.1 and its corresponding three outputs, the knowledge sharing and awareness of sustainable production practices and climate adaptation will be increased at the *zoba*, sub-*zoba*, *kebabi* and community levels.
Risk 2: Unless they are specifically and actively engaged, some stakeholders – especially vulnerable groups - may be excluded from decisions that affect them, with adverse impacts on their ability to claim their rights. Further, existing gender inequalities may be perpetuated or exacerbated if traditional differences in gender roles are not taken into consideration during consultations. Principle: Gender Equality and Women's Empowerment, Question P.10 and P.11 Risk rating: Substantial	Stakeholders potentially affected by the Project, who are also the main beneficiaries of some of its positive impacts, include rural populations that rely heavily on livelihood activities based on the harvesting of natural resources, mainly small-scale agriculture and livestock raising, who may not necessarily have the communication skills, self-confidence and resources to actively and fully participate in the consultative and participatory processes planned for the Project during implementation, and therefore may be left out of decision making related to Project activities. This risk may arise if those stakeholders are not actively and specifically targeted by the Project, and offered ample opportunities and means for culturally appropriate, meaningful, free and informed consultation and participation. Women are particularly vulnerable to this risk, in view of the traditional and differentiated roles played by males	During the PPG phase in 2016, as well as the Project revision and gender mainstreaming phase in 2022, **comprehensive stakeholder mapping, analysis and consultation** were carried out across the different natural resource use and management structures and groups. In addition, during the development of the safeguard documents for the Project in 2023, an extensive consultation process took place in Asmara with relevant national institutions and the Project area with regional, subregional and local institutions, local communities, including discussions with female stakeholders, and CBOs and NGOs. **The participatory and consultative approach applied during Project design and revision** will be carried forward during implementation, which will be guided by the **Stakeholder Engagement Plan** (see Annex 8), whose implementation details (e.g., venues, agendas, participants, timings, etc.) will be fully developed during the Project Inception Phase.

Risk description	Comments	Assessment and management measures
	and females in the Tsilima Plain and its Upper Catchment in relation to the livelihood activities mentioned above. For instance: i) women have the main responsibility for many of the year-round, time-consuming activities in agricultural production, such as weeding, hoeing, tending animals, milking livestock, fetching water, collecting firewood and processing of dairy products; and ii) women are traditionally responsible for trading agricultural products. Overall, power and decision making, both at home and in the community, are tilted in favor of men. Project activities may benefit men and women unequally owing to their separate roles in the livelihood activities in which they participate, which may affect their ability to engage with the Project, including in discussions about community-based land use and area development plans, or in activities targeting the involvement of communities in sustainable agricultural practices and alternative income generation, among others. Unless these differences in gender roles are taken into account, there is a risk that inequalities may be perpetuated or exacerbated by the Project.	Further, the capacity of farmers, herders, communities, and CBOs, including vulnerable groups, to participate in the design and implementation of Project interventions will be strengthened through awareness raising, hands-on training, piloting and field demonstration activities. The following activities illustrate the **incorporation in the Project strategy of participation, consultation and capacity building** of local populations and CBOs: • Under Output 1.1.2, farmers will be included, together with NARI staff and local institutions, in the periodic gender-sensitive capacity development and knowledge-sharing sessions on CCA and CSA. • Under Output 1.2.3, community members will be included in the planned training in monitoring and evaluation methods, techniques and indicators related to CCA and CSA, with specific attention to capacitating vulnerable community members. • Under Output 2.1.1, local communities will be engaged in the development of climate-resilient land use and area development plans. • Under Output 2.1.2, local CBOs, including Village Agricultural Committees (VACs), Water User Associations (WUAs), Land Use Committees (LACs) and farmer associations, among others, will be strengthened through financial and technical support in order for them to coordinate local-level participation in CCA, land use and development planning. • Under Output 2.2.3, local communities will be engaged in the planning and design of climate-smart watershed restoration and management measures. • Under Output 2.2.4, local communities and households will receive gender-sensitive training to undertake sustainable water use and management. • Under Output 2.3.1, training will be provided to: i) extension agents and CBOs in the oversight and coordination of local community involvement in the implementation

Risk description	Comments	Assessment and management measures
		of CCA interventions, CSA technologies and livestock production practices; and ii) local communities on the implementation and maintenance of CSA technologies and livestock production practices. Both trainings will pay specific attention to capacitating vulnerable community members. • Under Output 2.3.2, training will be provided to community members on value-addition activities. • Under Output 3.1.1, public awareness-raising and education campaigns on CCA will be conducted in the Tsilima Region. In addition to the above, the Project fully incorporates **gender issues in its conceptualization, design and implementation**. The Project preparation ensured that gender considerations are an **integral part of the Project design** and that it will be implemented with due consideration of gender-related concerns. For instance, **under Output 3.1.3, a gender strategy will be developed and implemented** that includes **capacity building** and enhancing the participation of women in the planning, selection, implementation and monitoring of CCA approaches and practices. Further, a **Gender Analysis and Gender Action Plan** (see Annex 10) was developed, whose objective is to implement Project activities from a gender perspective and, above all, to ensure that the Project results in benefits for the environment as well as for gender equality and the empowerment of women. The Action Plan defines **gender-specific actions and indicators for each Project output**, as well as institutional responsibilities for, respectively, their implementation and collection.
Risk 3: Potential complaints and grievances from affected communities, and likely exacerbation of conflicts among community members if anticipated Project benefits are not fully realized and distributed in an equitable manner. Principle: Accountability, Question P.14	Issues such as the following may give rise to complaints by individuals or communities and conflicts among them: i) the content of the community-based land use and area development plans to be developed and implemented under Output 2.1.1, in particular on issues such as assigned uses and types of allowed activities under each use and their intensities, areas designated as protected or restricted, proposed land	As explained in the management measures for Risk 2 above, the Project design was undertaken following a **strong stakeholder consultation process** that included vulnerable populations, which will be carried forward during implementation based on the **Stakeholder Engagement Plan** (see Annex 8). Further, the capacity of farmers, herders, communities, and CBOs, including vulnerable groups, to

Risk description	Comments	Assessment and management measures
Risk Rating: Moderate	capability classifications, among others; ii) the proposed redistribution and allocation of land to villagers under Output 2.1.3; iii) the formulation and implementation of alternative income-generating livelihoods under Output 2.3.2; iv) the implementation of compensation and rehabilitation measures to be developed for the possible economic displacement caused by the potential loss or restriction of access to community natural resources currently harnessed for livelihood support (please refer to Risk 7 for details); v) the potential negative impacts of the new livelihood activities implemented under the Project or the intensification of already ongoing productive activities promoted by the Project (please refer to Risk 4 for details) ; and vi) the fairness, inclusiveness and extent of the consultation and participation process undertaken by the Project.	participate in the design and implementation of Project interventions will be strengthened under the Project, as also noted in the previous row. In addition to the above, the specific social and environmental management instrument that will address the risk of economic displacement (i.e., **Livelihood Restoration Framework**) (see Annex 9), which will be developed during Project implementation (please refer to Risk 7 for details), will include a **Grievance Redress Mechanism**. Further, the specific social and environmental management instrument that will address the risks posed by the activities included in the livelihood diversification strategies and plans, the intensification of ongoing productive activities and the construction of infrastructures (i.e., **Environmental and Social Management Framework**) (see Annex 9), contains a Grievance Redress Mechanism. During the implementation of the different activities included in the Stakeholder Engagement Plan, ample information will be provided to stakeholders about the Grievance Redress Mechanism and how to access it.
Risk 4: Potential soil and water contamination, community and occupational health and safety hazards, generation of non-hazardous solid and liquid domestic wastes, and introduction of invasive species, if the Project interventions noted in the third column do not undergo appropriate screening and categorization procedures to exclude or screen out those interventions that are not compatible with Project objectives and hence may pose high negative impacts. Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management, Questions 1.6, 1.8, 1.9 and 1.10 Standard 3: Community Health, Safety and Security, Questions 3.1, 3.2 and 3.3 Standard 7: Labor and Working Conditions, Question 7.6	The interventions that pose some of the risks noted in the first column are the following: • The review and update of the extension services package under Output 1.2.2 will incorporate practices that are not covered in the current portfolio, which may include chemical fertilizers and pesticides, which are barely used in the case of the former and practically not used in the case of the latter in the Tsilima Region, and more intense use of natural fertilizers. The selected new practices will be implemented under Output 2.3.1. Likewise, the establishment and/or upgrade of existing forestry nursery sites under Output 2.2.3 may include the use of synthetic fertilizers and pesticides. The misapplication of pesticides and fertilizers (manure is mainly used as fuel in the Project area), and the accidental spill of pesticides may contaminate soils, groundwater, or surface water	The technical and operational details of the Project interventions that raise social and environmental concerns (i.e., interventions aimed at intensifying productive activities by updating and piloting practices not included in the existing agricultural extension package and by increasing food production through a range of CSA technologies and methods that are largely new to the Project area, the identification and implementation of alternative income-generating activities, and the construction of mostly small- to medium-scale structures for irrigation) were not specified during the Project preparation phase. The specifics of these interventions, such as their areas of implementation, scales, budgets, technical specifications, etc. will be defined during Project implementation. Therefore, the Project includes an Environmental and Social Management Framework (ESMF) (see Annex 9), which is applicable when an operation includes activities that are not fully defined and their exact areas of implementation are

Risk description	Comments	Assessment and management measures
Standard 8: Pollution Prevention and Resource Efficiency, Questions 8.1, 8.2 and 8.5 Risk rating: Moderate	resources. The exposure to hazardous products, in particular pesticides, presents health and safety hazards. • The watershed restoration and management measures under Output 2.2.3 will include planting 1.4 million trees and approximately 35,000 seedlings and will partially use fast-growing exotic species in community forestry initiatives. In addition, Output 2.3.1 will introduce tree-planting campaigns. Planting interventions may pose health and safety risks to community participants if they are not properly trained, lack adequate tools and equipment, or protective gear. The use of exotic plant varieties may open the door to invasive species if not carefully selected and monitored. • Output 2.2.3 will also include the construction of mostly small- to medium-scale water harvesting and storage structures for irrigation, and Output 2.3.2 will expand the agricultural land under irrigation. The construction of these structures may present health and safety risks to participating community members, as well as the risk of water and soil contamination and landscape degradation due to the inadequate disposal of solid and liquid wastes. During operation, the structural failure of these structures poses community health and safety risks. The implementation of selected income-generating activities under Output 2.3.2 will include the training of community members on value-addition activities, including agro-processing, and the provision of support to access to markets in and outside the Tsilima Region. Direct support to value-added activities poses risks such as an increase in demand for resources for transport, storage, and food processing (energy, water, etc.), and the generation of solid and liquid wastes. In addition, the operation of food processing facilities may generate noise and odors and pose occupational health and safety hazards. Further, the expansion of dairy and	not clearly identified, as is the case with the Project. The ESMF sets out the principles, rules, guidelines and procedures to ensure the social and environmental risks and impacts of the forth coming but as yet unspecified activities are fully identified (screened) and assessed, and that management measures are in place prior to implementation of the relevant activities with potential social and environmental risks and impacts. It contains measures for estimating and budgeting the costs of such measures, and information on responsibilities for addressing project risks and impacts. The ESMF also includes good practices and measures to prevent and mitigate negative risks and impacts in the implementation of productive agricultural, agroforestry and income-generating livelihood activities, community infrastructures, and watershed restoration and management measures. Further, the ESMF provides guidelines for the preparation of required specific targeted instruments such as, as applicable, Site-Specific Environmental and Social Management Plans (ESMPs), Site-Specific Health and Safety Management Plans (HSMPs), and Integrated Pest/Vector Management Plans (IP/VMPs) and Pesticide Management Plans (PMPs). The Project design includes the following measures, among others, that will reduce the likelihood of occurrence of the risks noted: • Training of extension agents on the revised packages. • Engagement with local communities in the planning and design of water-harvesting and -storing interventions, flood diversion and water-spreading facilities, and on-farm and off-farm soil and water conservation measures. • Provision of training to technical staff of the WRD and the MoA at *zoba* and sub-*zoba* levels on adaptation techniques and approaches specific to water management, and to local communities on the construction, operation and maintenance of watershed restoration measures and technologies.

Risk description	Comments	Assessment and management measures
	poultry farming under Output 2.3.2 may lead to obnoxious odors, and the generation of solid and liquid wastes that may pollute soils and water bodies.	• Establishment of demonstration plots at each of the project intervention sites to show practical CSA technologies and methods, training of local communities on the implementation and maintenance of CSA technologies, and training of extension agents and CBOs to oversee and coordinate local community involvement in the implementation of CCA interventions and technologies. Provision of technical and financial support for the identification and implementation of selected income-generating activities.
Risk 5: If not appropriately planned and executed, watershed restoration and management measures could lead to a decline in groundwater resources and changes in natural hydrological processes. Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management, Questions 1.1 and 1.11 Standard 3: Community Health, Safety and Security, Question 3.1 Standard 8: Pollution Prevention and Resource Efficiency, Question 8.6 Risk Rating; Substantial	The watershed restoration and management measures under Output 2.2.3 will include the construction of the following structures for irrigation purposes: i) approximately six water diversion schemes or small masonry or concrete check dams; ii) structures such as micro dams to harvest floodwaters; and iii) two sub-surface dams that can retain approximately 600,000 m^3 of water. In addition, Output 2.3.2 will expand the agricultural land under irrigation. The existing surface water storage in the Upper Mereb Basin, which covers the Tsilima Plain and its upper catchment, includes 33 small to medium size reservoirs created by the construction of small to medium size dams with a reported original reservoir capacity of 57.1 million m^3, including a reservoir still under construction in 2015. Although there are no comprehensive and detailed studies of the magnitude of groundwater resources in the Project area, it is estimated that significant quantities of variable quality groundwater occur mainly within the Tsilima Plain and along the banks of major streams. Most of the many groundwater extraction facilities (irrigation wells) are concentrated within the Tsilima Plain and its lower catchment. Preliminary calculations performed during the Baseline Study of the PPG Phase (2015) estimated that a total of 8.28 million m^3 of groundwater per year would be available in the Tsilima plain and its foothills of the Upper Mereb Basin, excluding 11,39	The designs, locations, scales, budgets, etc. of the proposed structures to harvest and store water will be defined during the Project implementation phase and, therefore, these structures will undergo screening and categorization through the ESMF (see Annex 9). The screening procedure will exclude from further funding consideration those proposals that: i) are not included in the assessment of groundwater and surface water resources for the Upper Mereb catchment, and the development of a groundwater inventory to be conducted under Output 2.2.1; ii) are not supported by the site investigations and hydrological analyses of their potential locations to be conducted under Output 2.2.3; and iii) are not included in the comprehensive water development and management plans to be prepared under Output 2.2.1. Further, given that UNDP's SES requires the preparation of a limited-scope Environmental and Social Impact Assessment (ESIA) for substantial risk interventions, in the case of the two proposed relatively large sub-surface dams and any other proposed relatively large dam, the screening procedure will exclude them from further funding consideration if they do not present evidence that they already obtained, or are in the process of obtaining, an Unconditional Environmental Clearance issued by the *Zoba* Department of Environment, as stipulated in the National Environmental Assessment Procedures and Guidelines (NEAPG) (1999). The ESMF will require the consideration of the issues noted in this column of this table in the preparation of

Risk description	Comments	Assessment and management measures
	million m^3 pumped from existing wells for irrigation and 410,000 m^3 pumped for community and town water supply at the time the Baseline Study was conducted. In spite of their small scale, the construction of the proposed surface water retention structures under the Project raises concerns about their cumulative impacts, in particular in relation to the hydrological cycle in the region, habitats that have already been extensively modified and water availability to downstream users, when taken together with existing and future surface dams. Regarding groundwater resources, the planned construction of two relatively large sub-surface dams with a reservoir capacity of about 600,000 m^3 [16] may contribute to the decline of groundwater resources which, based on the preliminary technical analysis and interviews with communities and irrigators conducted for the Baseline Study in 2015, were already under intensive use and diminishing. When compared with the existing surface dams in the Tsilima Region, the average capacity of each of these sub-surface dams (300,000 m^3) would place them among the largest dams in the Region, given that the original reservoir capacity of the top ten largest existing surface water retaining structures is equal to or greater than 300,000 m^3. These sub-surface dams also raise concerns regarding the modification of groundwater flow patterns given the blocking of the two-way exchange of water between the upstream and downstream areas of the dam, the reduction of groundwater available to the downstream area of the aquifer, and the accumulation of anthropogenic contaminants like nitrogen in the stored water from agricultural runoff. Both small- and medium-size surface and sub-surface dams for irrigation purposes must be carefully planned, designed, implemented, maintained and monitored, with strong community	the limited-scope ESIA for the two proposed sub-surface dams and any other proposed relatively large dam, as well as the development of a targeted, Site-Specific ESMP, including stakeholder consultation, and the definition of health and safety measures during construction. Output 2.2.3 includes among its activities the conduct of ESIAs for these structures. As noted above, the Project design includes the following measures: • Under Output 2.2.1, the implementation of an assessment of groundwater and surface water resources for the Upper Mereb catchment, and the development of a groundwater inventory. This will include an assessment of the current and projected water demands for all land uses and purposes such as agriculture, housing and livestock. In addition, comprehensive water development and management plans will be prepared, and a groundwater monitoring strategy for the Upper Mereb catchment will be established and implemented, including the purchase and installation of groundwater monitoring and stream gauging equipment. • Under Output 2.2.3, site investigations and hydrological analysis of potential locations for the implementation of IWM and soil and water conservation measures will be undertaken. • Under Output 2.2.1, ESIAs will be prepared for relatively large dams, particularly the two proposed subsurface dams.

[16] These are relatively large structures, considering that typical small sub-surface dams have a storage capacity of about 10,000 m^3, while larger sub-surface dams have a capacity of over 100,000 m^3 (*Schulte, A., Suthfeld, R., Vogt, B. (2018): E-Learning Project IWRM - Integrated Water Resources Management. Department of Earth Sciences, Freie Universität Berlin*, available at: https://www.geo.fu-berlin.de/en/v/iwrm/index.html).

Risk description	Comments	Assessment and management measures
	input to and sufficient financing of all phases of the project cycle, in order to ensure their viability, in view of the mixed record in Africa and other continents in terms of the success of these structures.	
Risk 6: Project outcomes 2.2 and 2.3 and some of their corresponding outputs are vulnerable to climate change impacts. Further, several Project sites are subject to natural hazards such as droughts and flooding. Standard 2: Climate Change and Disaster Risks, Questions 2.1 and 2.2 Risk rating: Substantial	Eritrea has no reliable historical climate data to inform the development of accurate national climate change scenarios and subsequent adaptation plans for the country. Climate projections for Eritrea have yet to be developed or downscaled to the Central Highlands Zone, where the Tsilima Region is located. There is only one model and one emission scenario for climate simulations in the East African region. All scenarios forecast an increase in temperature in the country. The most recent climate change projections indicate an increase in mean annual temperature of 1.1 to 3.8°C by the 2060s, 1.6 to 5.4°C by the 2090s and 1.4 to 5.8°C by the year 2100. All projections indicate substantial increases in the frequency of days and nights considered hot. In the case of mean annual rainfall for the country, most climate change models indicate an increase between October and December and a decrease during the January to March and April to July periods. Increased rates of evaporation related to increased temperature will offset rainfall increments that may be observed and lead to decreased soil moisture and reduced productivity. Abnormal changes in air temperature and precipitation, particularly their amount and timing, threaten the croplands, pastures and forests of the country. In the Project area, the widespread production of sorghum and barley is threatened by decreased precipitation, increased seasonality in rainfall, increased temperatures and increased rates of evapotranspiration. Droughts have long been a significant and severe natural phenomenon in the country, and there is a high likelihood that climate change will increase their incidence and severity. The Project area has suffered from extreme variability in precipitation within and between years,	The focus of the Project is on climate change adaptation and resilience. The Project seeks to integrate adaptation measures into ecosystem restoration and agricultural production systems to address climate change in Eritrea, in particular in the Tsilima Region, and secure the benefits of the National Food Security Strategy (NFSS) and the Integrated Water Resources Management (IWRM) Action Plan. This will be achieved through six integrated and complementary outcomes. Outcome 1.1 will increase the technical capacity of research institutions to undertake climate-related research. Outcome 1.2 will increase the technical capacity of extension staff to provide knowledge-based advice regarding climate-smart extension services. Outcome 2.1 will enhance the security of land tenure for local communities living in the Tsilima Region who are subject to the *diessa* land-tenure system. Outcome 2.2 will improve water availability through implementing watershed restoration measures and adopting an IWRM approach. Outcome 2.3 will enhancOutcome 2.3 will enhance agricultural productivity and food security through CSA technologies and methods.ase monitoring, knowledge sharing and public awareness of the impacts and risks of climate change in the Tsilima Region at both *zoba* and sub-*zoba* levels. Both CSA and IWRM measures that reduce the vulnerability of local communities to climate change will be identified and integrated into the NFSS and IWRM Action Plans. These will inform the upscaling of CCA interventions throughout Eritrea. The following practical outputs and interventions included in Outcomes 2.1, 2.2 and 2.3 will contribute to enhancing the adaptation and resilience of the Tsilima Region to climate change: • Output 2.1.1: i) support to the development of national drought

Risk description	Comments	Assessment and management measures
	and spatial variation over very short distances, which have contributed to frequent droughts. Insufficient information is available to predict the change in frequency of extreme events — such as flooding — although an increase in such events has been identified as a threat in the National Adaptation Program of Action (NAPA) (2007). As noted, the predicted warmer temperatures and uncertainty in precipitation patterns are expected to affect evaporation and humidity, which will further affect rural water sources, resulting in decrease in stream flows, drop in groundwater level, drying of springs and disappearance of base flows, which are the sources of rural water supply in the country. In the Tsilima Plain and upper catchment areas, some changes have already been observed, such as the seasonal fluctuation in groundwater levels because of rainfall variability and the decrease in groundwater availability. Reduced annual flow of rivers and streams, which recharge the groundwater aquifers that supply irrigation water in the Tsilima Region, will have a negative impact on the supply of water for irrigation. In general, all shallow and unconfined aquifers of the central highland and the eastern and western foothills will be impacted most significantly from predicted climate changes and extreme weather events like drought. Field observations and stakeholder consultations conducted for the Baseline Report during the PPG Phase indicate that in the majority of shallow wells in the Tsilima Plain the groundwater level is lowered from year to year and wells run dry during drought periods.	and flood management action plans; ii) generation of maps identifying flood- and drought-prone areas under climate change conditions that pose a threat to the livelihoods of local communities in *Kebabi* Administration Areas; and iii) the conduct of a comprehensive Vulnerability Reduction Assessment. • Output 2.2.1: i) implementation of an assessment of groundwater and surface water resources for the Upper Mereb catchment, and development of a groundwater inventory; ii) preparation of comprehensive water development and management plans; and iii) establishment and implementation of a groundwater monitoring strategy for the Upper Mereb catchment. • Output 2.2.2: installation and/or refurbishment of hydro-meteorological stations at 10 sites in the Tsilima Region. • Output 2.2.3: identification and implementation of climate-smart watershed restoration and management measures. • Output 2.3.1: development and transfer of CSA practices to farmers. • Output 2.3.2: identification and implementation of alternative income-generating livelihoods in selected communities.
Risk 7: Some farmers and herders currently harvesting natural resources of the Tsilima Region as their main means of livelihood support and sustenance, may suffer economic displacement due to the loss or restriction of access to natural resources resulting from the implementation of community-based land use and area development plans (under Output 2.1.1), and the	Once implemented, over 9,000 ha of the Tsilima Region will be subjected to the uses and regulations agreed upon in the approved land use and area development plans to be developed for each of the *Kebabi* Administration Areas. Once established, the new natural enclosures will cover 300 ha, but the area to be covered with the expansion of existing enclosures has not been defined. These plans may	Given that community-based land use and area development plans will be prepared during the implementation phase, and that enclosure areas will also be determined during implementation, there is uncertainty about the potential extent of economic displacement. Therefore, a Livelihood Restoration Framework (LRF) has been prepared for the Project (see Annex 9), as required by Standard 5 on Displacement and

Risk description	Comments	Assessment and management measures
establishment of new permanent forest and rangeland enclosures, or the expansion of existing ones (under Output 2.2.3). Standard 5: Displacement and Resettlement, Question 5.2 Risk Rating: Moderate	impose limitations and prohibitions on currently allowed uses in certain areas, including land cultivation, grazing or the harvesting of forest resources, and the enclosures would preclude productive uses within their confines, all of which would result in negative economic impacts on the families whose livelihoods depend partially or largely on the traditional access to the natural resources present in the areas to be placed under regulation or enclosure. The implementation of the above plans, and the enclosure of forest and rangeland areas would effectively change the current regime of utilization of common natural resources in the Tsilima Region from open access, whereby there are virtually little or no restrictions as to areas where productive activities take place, or to the quantity or type of natural resources harnessed, to a sustainable resource management system that may result in agreements to impose and implement management measures such as the definition of areas where certain natural resources may not be exploited because of their environmental sensitivity, the establishment of harvesting levels or prohibition of extraction of some forest species depending on seasonality or threat level, the exclusion of traditional agricultural or grazing spots from further use as harvest areas, the designation of areas currently used for open agriculture or grazing as conservation zones, etc.	Resettlement for projects that may involve potential restrictions of land uses that are not fully known pre-appraisal or cannot yet be assessed. The LRF is the initial management plan that provides guidance on, among other aspects, the timeline and procedures for the preparation of the Livelihood Action Plan (LAP) for the Project, participation of individuals and communities in decisions potentially impacting them and their livelihoods, compensation and rehabilitation assistance, applicable legal framework, and monitoring and evaluation. In addition, it includes the Terms of Reference for the development of the detailed LAP to be prepared during Project implementation. The Project design includes a strong participatory approach to the development of community-based land use and area development plans, and the designation of nature enclosures, including consultation with vulnerable groups. In addition, the sub-*zoba* administration, *Kebabi* Administration Areas and extension agents will assist communities in the technical aspects involved in the development of the plans.
Risk 8: The Project will contribute indirectly to future changes in the traditional land tenure arrangements in the Tsilima Region. Standard 5: Displacement and Resettlement, Question 5.4 Risk Rating: Low	The Land Proclamation No. 58/1994 gives the central government ownership rights to all land of the state and eliminates traditional village or family ownership structures, such as the *diessa* practiced in the Tsilima Region, which is a communal land-tenure system whereby land is distributed to individual households on a rotational basis for a period of 5 to 7 years, but which in practice can extend as long as 10 to 12 years in the region. The Land Proclamation gives every Eritrean of 18 years of age and above usufruct right to land and thus provides security of tenure. The government is gradually implementing the Proclamation since its enactment in	

Risk description	Comments	Assessment and management measures
	1994, but in the Tsilima Region the *diessa* is still the land distribution and tenure system in place. Project activities will only provide technical support to the *zoba* and sub-*zoba* administrations to inform the land redistribution process through the classification and mapping of land according to potential land uses, and the assessment of the availability and quality of resources (e.g., soil and water).	

Budgetary provision has been made for risk management during project implementation. During the first six months of implementation, a comprehensive scoping and assessment will be conducted to identify appropriate risk mitigation measures. This scoping will be undertaken to: i) adequately determine the key risks involved in the planned interventions; ii) inform to which extent these interventions can be implemented; iii) identify their potential impacts on people and the environment; iv) determine how to manage them; and v) identify the key roles and responsibilities of stakeholders and duty-bearers. Targeted assessments will be conducted where necessary to ensure that risk management plans are developed for each of the key risks identified. This includes a communication strategy (which will build on the Stakeholder Engagement Plan, **Annex 8**) and a gender strategy (which will build on the GAP, **Annex 10**) to be developed under Component 3 of the project.

Further targeted assessments that should be undertaken prior to the commencement of certain project activities may include strategic risk analyses and scoping of social and environmental risks of:

- the collation, synthesis and monitoring of project-related traditional knowledge on CSA practices for a central database to protect community-owned knowledge (Outputs 1.1.2, 1.1.4, 1.2.3 & 3.1.2);
- the development of regional land-use and area development plans and a national drought and flood management plan to leave no one behind (Output 2.1.1);
- the revision of community by-laws for sustainable land, forest and water management to leave no one behind (Output 2.1.2);
- the classification of land uses and quality to inform the government's land redistribution under the land proclamation to ensure the land-tenure security of vulnerable groups (Output 2.1.3);
- the development of comprehensive water-use and development plans — in particular with regards to sustainable use of groundwater — and review of the 2009 IWRM Action Plan to maintain ecosystem integrity (Output 2.2.1);
- the development of water storage and capture infrastructure to reduce the impact on local hydrology (Output 2.2.3);
- the implementation of seasonal enclosures to ensure that women are not disproportionately affected (Output 2.2.3);
- the planting of multi-purpose, non-native trees to maintain ecosystem integrity (Output 2.2.3);
- the implementation of CSA practices to ensure ecosystem integrity and equal benefits for all (Output 2.3.1); and
- the introduction of alternative income-generating activities to ensure equal benefits for all (Output 2.3.2).

Stakeholder engagement and south-south cooperation:

The implementation strategy for the project includes extensive stakeholder participation. At a broad level, participation and representation of stakeholders will be conducted through the governance structures to be put in place by the project as outlined and depicted in the organogram in the Governance and Management Arrangements (**Section VII**) and through the existing structures at national and local/village levels (e.g., VACs, CBOs, WUAs, farmer associations). Stakeholders will be consulted throughout the implementation phase to: i) promote community understanding of the project's outcomes; ii) promote local community ownership of, Example, the project by engaging in the planning,

implementing and monitoring of the CCA interventions; iii) communicate to the public in a consistent, supportive and effective manner; and iv) maximise synergy with other ongoing projects.

During the PPG phase in 2016 and the project revision and gender mainstreaming phase in 2022, comprehensive stakeholder mapping, analysis and consultation were carried out across the different natural resource use and management structures and groups. This process informed the development of the Stakeholder Engagement Plan (see **Annex 8**), which will be revisited for refinement during the project inception phase to ensure it is comprehensive and locally adapted. The *primary stakeholders* in the project area are the rural subsistence mixed rainfed farmers, of whom some practice small-scale irrigation and commercial dairy, beef, pork, and poultry production. The issues of food security and IWRM, however, in the context of climate change will have influence beyond the project area and requires involvement of many other stakeholders at all levels. The *secondary stakeholders* include many national, *zoba* and sub-*zoba* governmental and non-governmental institutions and agencies that have some role to play in the planning and implementation of CSA and other appropriate CCA measures. The different project stakeholders will participate in the project activities as outlined in Table 4 below. Stakeholder consultation and feedback mechanisms will be formalised through the Project Board and technical working groups at both the national and *zoba* and sub-*zoba* levels through periodic meetings that will assess progress, propose adaptive management solutions and report to communities and decision-makers on project progress and results. Finally, the project will also establish a stakeholder Grievances Mechanism, as part of the project safeguard measures, so that any issues that arise during project implementation can be raised by stakeholders at all levels. The project stakeholder GRM will complement existing redress mechanisms already available in local contexts.

Table 4. Matrix of stakeholder engagement

Outcome	Output	Stakeholders	Key responsibilities
1.1. Capacity of research institutions to undertake climate-related research increased.	1.1.1. Capacity and resource eeds assessment undertaken, and apacity development strategy and raining programme developed and nplemented for NARI, including raining on climate change and IWRM nd on research and data collection, nalysis and the packaging or ublication of information.	MoA MoLG	Overseeing: • Participation in the capacity and resource needs assessment. • Preparation of capacity development strategy. • Development and implementation of training programme.
	1.1.2. Network and information-sharing platform on CCA and CSA developed at national, *zoba* and sub-*zoba* levels.	MoLWE MoA: NARI, AED & RSD MoTC *Zoba*, sub-*zoba* and *kebabi* administrations HAC	Coordinating: • Development of network and information-sharing platform. • Strengthening of the ASIS at national level • Establishment of FFSs. • Establishment of linkages with international institutions.
	1.1.3. Technical and financial support provided to NARI in association with other academic and research institutions to conduct research and produce research reports on CSA and production systems, including but not limited to: i) drought-resistant and early-maturing crops; ii) sustainable water-use and conservation practices; iii) conservation agriculture practices, including	MOA MoLG MoLWE MoA: AED & RSD MoTC *Zoba*, sub-*zoba* and *kebabi* administrations HAC Farmers	• Provision of technical and financial support to NARI. • NARI performs action research and field demonstrations on CSA.

Outcome	Output	Stakeholders	Key responsibilities
	tillage management and soil fertility; iv) sustainable landscape management; and v) livestock production and grazing management.		
	1.1.4. Climate information and monitoring systems developed in association with relevant line ministries, departments — in particular the MSU of the MoTC and the AMU of the MoA — and local communities based on data received from hydro-meteorological stations installed under Output 2.2.2.	MoA MoLG MoTC: MSU MoLWE MoH: *Zoba* and sub-*zoba* administrations National Union of Eritrean Youth and Students (NUEYS) NUEW	Coordinating: • Implementation of operational EWS at a selected project intervention site. • Training of extension agents, local government representatives and community members. • Development of flood and drought early warning response plans with pilot communities. • Implementation of community-based climate monitoring and EWS in selected project intervention sites, including on public health (e.g., the increasing frequency of malaria and dengue fever outbreaks).
1.2. Capacity of extension service institutions to provide knowledge-based climate-smart extension services to agriculture, livestock production and water management increased.	1.2.1. Capacity and resource needs assessment, development and training programmes implemented in institutions involved in extension services on *inter alia* sustainable land, forestry, and water resources management.	MoLWE MoA MoLG FWA *Zoba*, sub-*zoba* and *kebabi* administrations	Coordinating: • Review and assessment of capacity and capacity needs.
	1.2.2. Extension packages reviewed and updated to include best practices and other relevant materials through the provision of technical and financial support at national, *zoba*, sub-*zoba* and *kebabi* levels.	MoLWE MoA MoLG FWA *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	• Review and updating of extension packages.
	1.2.3. A long-term strategy developed and implemented to monitor and evaluate climate-smart: i) water resources use and management; ii) agricultural practices; and iii) livestock productivity.	MoLWE MoA MoLG FWA *Zoba*, sub-*zoba* and *kebabi* administrations Farmers	Overseeing: • Development of M&E strategy.
2.1. Climate-resilient land-use planning implemented over 9,000 ha of the Tsilima plains and its upper catchment area.	2.1.1. Based on the assessments undertaken in Output 2.2.1: i) identify and map drought- and flood-prone areas; and ii) develop and implement community-based land-use and area development	MoLWE MoA: AMU MoTC: MSU MoLG *Zoba*, sub-*zoba* and *kebabi* administrations	Overseeing: • Flood and drought vulnerability mapping. • Development and implementation of

Outcome	Output	Stakeholders	Key responsibilities
	plans in the Tsilima plains and its upper catchment area .	CBOs Farmers	community-based land-use plans.
	2.1.2. Existing CBOs strengthened, including *inter alia* VACs, WUAs and farmer associations to coordinate local-level participation in CCA, land use and development planning.	MoLG *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	Coordinating: • Establishment and strengthening of community institutional structures.
	2.1.3. Technical support provided to the *zoba* and sub-*zoba* administrations to inform the land redistribution process through the: i) classification and mapping of land according to potential land uses; and ii) assessment of the availability and quality of resources (e.g., soil and water).	MoLWE MoA MoLG Zoba, sub-*zoba* and *kebabi* administrations CBOs	Overseeing: • Mapping and classification of land to inform future allocation of individual plots to households. • Resource availability and quality assessments.
2.2. Integrated water management operationalised across the Tsilima plains and its upper catchment area, increasing water availability and land under irrigation.	2.2.1. Groundwater and surface water resources assessment undertaken and a groundwater monitoring strategy — including a system of data collection and information exchange on water use and projected demand — developed and implemented in the Upper Mereb catchment.	MoLWE: WRD MoA MoLG *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	Coordinating: • Assessment of the groundwater and surface water resources. • Development and implementation of a groundwater monitoring strategy. • Engagement with all stakeholders.
	2.2.2. Hydro-meteorological stations established and/or refurbished at Mendefera, Dbarwa, Halhale, Tala, Dekitsuna Adi Felesti, Shiketi and Gerteti.	MoLWE MoA: AMU MoTC: MSU MoLG *Zoba*, sub-*zoba* and *kebabi* administrations	Overseeing: • Installation of hydro-meteorological stations. • Collection and analysis of data from hydro-meteorological stations.
	2.2.3. Climate-smart watershed restoration and management measures identified and implemented, including: i) water harvesting and storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures.	MoLWE MoA MoLG Forestry and Wildlife Authority (FWA) NARI *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	Coordinating: • Identification and implementation of improved water use and management techniques. • Support to farmers on implementation of on-farm water conservation measures.
	2.2.4. Local communities and households receive gender-sensitive training to undertake sustainable water use and management, including *inter alia* water harvesting and the construction and maintenance of hard and soft engineering interventions.	MoLWE MoA MoLG FWA NARI *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	Coordinating: • Training of: i) technical staff on the assessment of groundwater resources and monitoring; and ii) local communities and households on sustainable water use and management.
2.3. Increased food production through the	2.3.1.CSA practices— informed by research product generated under	MoLWE MoA	Overseeing:

Outcome	Output	Stakeholders	Key responsibilities
implementation of CSA practices across the Tsilima Region.	Output 1.1.3 and land-use and area development plans prepared under Output 2.1.1 — developed and transferred to farmers, including: i) drought- and disease-resistant varieties; ii) integrated crop-livestock systems; iii) conservation agriculture; iv) agroforestry; v) silvo-pasture; and vi) rangeland and livestock management.	MoLG FWA *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	• Implementation of a range of climate-resilient agricultural technologies and methods in and around pilot communities. • Establishment of demonstration plots at each of the project intervention sites. • Training of local communities on CSA technologies and livestock production methods.
	2.3.2. Alternative income-generating livelihoods identified and implemented in selected communities.	MoA MoLWE MoLG FWA *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	Coordinating: • Development and implementation of alternative livelihood options. • Training of extension staff and local communities.
3.1. Increased monitoring, knowledge sharing and awareness at zoba, sub-zoba, kebabi and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) CSA technologies and measures; and iv) sustainable natural resource use and management.	3.1.1. Public awareness-raising and education campaigns conducted in the Tsilima Region.	MoA, NARI MoLWE FWA MoLG HAC Ministry of Education *Zoba*, sub-*zoba* and *kebabi* administrations CBOs Farmers	Overseeing: • Awareness-raising campaigns for stakeholders, academic institutions, NGOs, CBOs and local communities. • Implementation of a gender strategy. • Disseminating lessons learned and knowledge generated through the project.
	3.1.2. Communication strategy developed and implemented for sharing lessons learned and best practices to: i) other *zobas*, sub-*zobas* and *kebabis*; and ii) high-level decision-making institutions.	MoLWE MoA MoLG FWA HAC *Zoba*, sub-*zoba* and kebabi administrations	
	3.1.3. Gender strategy developed and implemented that includes capacity building and enhancing the participation of women in the planning, selection, implementation and monitoring of CCA approaches and practices.	MoLWE MoA MoLG *Zoba*, sub-*zoba* and *kebabi* administrations CBOs NUEW NUEYS	

While the project is country-specific and does not include a focus on collaboration with other countries for the implementation of project activities, it draws on global principles of sustainable natural resource management, and the lessons learned from the project will be disseminated regionally. In this light, the project will provide opportunities for regional cooperation with countries implementing initiatives on CCA in geopolitical, social and environmental contexts relevant to this project in Eritrea.

To bring the voice of Eritrea to global and regional fora, this project will explore opportunities for meaningful participation in specific events where the UNDP could support engagement with the global development discourse on CCA. In addition, the project will provide opportunities for regional cooperation with countries that are implementing CCA initiatives in geopolitical, social, and environmental contexts relevant to this project in Eritrea.

Gender equality and women's empowerment:

A gender analysis was conducted, and a GAP developed as part of the project review and gender mainstreaming that took place in August to November 2022 (refer to **Annex 10** for the complete analysis and recommendations) to guide and support gender equality and women's empowerment interventions throughout the project's implementation phase while respecting the norms, values, and customs of the beneficiary communities. Accordingly, *gender responsiveness* will be mainstreamed into the project's activities under the coordination of the project's Gender Focal Person and in line with the GAP and the gender strategy to be developed under Output 3.1.3. These guidelines for gender-sensitive and gender-responsive project implementation will be further refined during the inception phase of the project. The outcomes of these interventions will be monitored through *gender-disaggregated indicators and targets* in the project results framework, the annual workplan and the GAP.

In Eritrea, women have equal rights to men under national law that are enshrined in the constitution and detailed in the National Policy on Gender (2004) and the National Gender Action Plan (2003–2008). In rural communities, women farmers are increasingly taking charge of households and women are being recognised as natural resource managers, as evidenced by their greater representation as leaders on community structures.
The gender disparities are anticipated to intensify amidst shifting climatic conditions, thereby impacting livelihoods reliant on natural resources. Insights from surveys conducted during the PPG phase (Annex 12) highlight several challenges encountered by Eritrean women, including: limited resources, labor, limited education particularly in rural areas leading to limited presence in decision making positions and processes. These challenges contribute to, among other areas, a disproportionate burden of farm labor for women alongside significant domestic responsibilities, financial constraints hindering the development of land owned by women, and insufficient knowledge regarding climate-smart agricultural practices, particularly in water management, among women farmers.
These challenges lead to *inter alia*: i) an increasing burden of farm labour for women in addition to considerable domestic responsibilities; ii) capital constraints that hamper the development of women-owned land; and iii) knowledge limitations on CSA, including water management, in women farmers.

The most recent gender analysis (**Annex 10**) demonstrated that women and men in the project area face different challenges and play highly differentiated roles in the local economy and society from the household to the government level. Of the ~74,416 inhabitants of the project footprint, ~48% are women. Although poverty is high for the whole population, proportionately more women (~70%) than men (~40%) experience poverty. Women and men have differentiated tasks in the agricultural sector, with many of the year-round, time-consuming activities such as weeding, hoeing, tending the animals, milking the livestock, and processing of products being the principal responsibility of women. As a result of these different roles, women will benefit more from activities geared towards innovations and capacity building on poultry farming, drought-resistant and early maturing crops, watershed restoration and the handling of post-harvest challenges, while men will likely benefit more from activities related to beekeeping, non-timber forest products and agricultural extension services. Women dominate the end of the agricultural value chain, with men rarely involved in trading activities. On the domestic front, women are almost exclusively responsible for cleaning, cooking, caregiving and water and fuelwood collection. Women also carry out most of the work in the communities related to the maintenance and construction of roads, buildings and water infrastructure, community labour at schools and hospitals and the organisation of village festivals. This work is, however, usually supervised by men. In fact, power, and decision-making, both at home and in the community, are tilted in favour of men. At the household level, men operate as *de facto* heads of households and generally make decisions related to family, labour division, land, income, and other benefits from activities that both men and women participate in, even though the 1994 Land Proclamation grant women and men equal access to land. At the *zoba* administrative level, men make up ~70% of the staff. Women are almost entirely absent from the top management of the MoA, MoLWE and NARI and the few women employed by these government institutions generally have lower academic qualifications than the men on the staff.

In view of the above, the project will prioritise the needs of women, the youth, the poor, the elderly and people with disabilities in project interventions as part of an overarching strategy to leave no one behind. Firstly, the project will

close gender gaps in access to and control over resources by: i)ensuring that women are included in decision-making related to the selection and implementation of project activities that will increase their resilience and income-generation capacity; ii) prioritising women and the youth's participation in the various training activities and capacity-building programmes supported by the project; and iii) ensuring that project-generated information on CSA and sustainable land, forestry and water management reaches women, the elderly, the youth and illiterate community members. Secondly, the project will improve women and the youth's participation and decision-making by: i) seeking the advice and technical support of the NUEW and the NUEYS during project implementation; and ii) including diverse representatives as effective participants in all project structures. Thirdly, the project will generate socioeconomic benefits and services for all community members by: i) prioritising the income-generation capacity of women and women-headed households; ii) by providing tailored technical support to women farmers; and iii) mainstreaming gender issues into community-based land-use and area development plans, community by-laws, national development plans such as the NFSS and the IWRM Action Plan and sectoral legislation. Further details on the gender-sensitive, gender-responsive and gender-transformative activities recommended by the GAP are summarised in Table 5 below and provided in full in **Annex 10**.

Table 5. Gender action plan with recommended gender-related activities for this project under each of the project outputs.

Gender-related activity	Indicator	Target
Output 1.1.1. Capacity and resource needs assessment undertaken, and capacity development strategy and training programme developed and implemented for NARI, including training on climate change and IWRM and on research and data collection, analysis and the packaging or publication of information.		
Establish special programmes to provide women staff with the opportunity to advance their careers at NARI.	Number of scholarships provided for women staff to study towards advanced degrees.	At least 30% of women staff obtain scholarships to study towards advanced degrees.
Prioritise capacity building for women researchers and staff.	Number of staff and researchers at NARI involved in gender-transformative capacity development programme, disaggregated by gender.	At least 30% of trainees are women.
		At least 50% of topics covered are those identified as women's capacity gaps.
		At least 20% of research teams led by women.
Develop a gender-transformative policy guideline for providing technical and financial support to NARI.	Number of policy guidelines developed.	One policy guideline developed stating the number of allocations per: i) gender; ii) academic levels; and iii) speciality of researchers.
Output 1.1.2. Network and information-sharing platform on CCA and CSA developed at national, *zoba* and sub-*zoba* levels.		
Enable effective participation of women in the dialogue between the research institutions, line ministries, extension services and communities and in other information-sharing activities organised by NARI.	Number of people included in the platform for dialogue, disaggregated by gender.	At least 30% of platform participants are women.
	Number of people in leadership positions in the platform, disaggregated by gender.	At least 30% of leadership roles on the platform are occupied by women.
		At least one representative from the NUEW is involved in the dialogues.
Prioritise women researchers at NARI, local women's groups and women farmers as beneficiaries of training opportunities on the effectiveness of CCA interventions, food security, IWRM and climate change.	Number of trainees, disaggregated by gender.	At least 30% of researchers trained are women.
		All women's groups at local levels are involved in training and knowledge-sharing.
		At least 50% of farmers trained are women.
Encourage women researchers and academics to present research results, produce publications and participate in or attend	Number of researchers benefiting from funds to increase research output and collaboration, disaggregated by gender.	At least 30% of publications are co-authored by women.
		At least 10% of publications are led by a woman author.

Gender-related activity	Indicator	Target
regional forums, workshops, research internships and exchange visits.		At least 30% of funds are allocated to advance the participation of women in research-sharing events.
Preferentially appoint twomen on structures that will liaise with research institutions and extension agents.	Number of people appointed on VACs, as VCFs and as village representatives, disaggregated by gender.	At least 50% of people on these structures are women.
		At least 30% of VAC chairpersons are women.
Output 1.1.3. Technical and financial support provided to NARI in association with other academic and research institutions to conduct research and produce research reports on CSA and production systems.		
Give preference to women participants in research and training programmes relevant to CCA in the Tsilima and its upper catchment area.	Number of participants in research and training programmes, disaggregated by gender.	At least 30% of participants are women.
Give women researchers the opportunity to publish their work as peer-reviewed articles and policy briefs.	Authors of research output, disaggregated by gender.	At least 30% of research output is co-authored by women.
		At least 10% of research output is led by a woman author.
Output 1.1.4. Climate information and monitoring systems developed in association with relevant line ministries, departments — in particular the MSU of the MoTC and the AMU of the MoA — and local communities based on data received from hydro-meteorological stations installed under Output 2.2.2.		
Prioritise women staff in the capacity-development programme of the AMU and the MSU.	Number of participants in the capacity-development programme, disaggregated by gender.	At least 30% of participants are women.
Develop a strategy to properly compensate women for their participation in project activities.	Number of measures identified to ensure women's (and men's) effective participation.	One strategy with gender-sensitive measures developed.
Incorporate women's perspectives on climate risks and the impacts thereof on their livelihoods as crucial information in the development of an EWS and risk maps.	Number of people consulted during the establishment of the community based EWS, disaggregated by gender.	At least 50% of people consulted are women.
Output 1.2.1. Capacity and resource needs assessment, development and training programmes implemented in institutions involved in extension services on *inter alia* sustainable land, forestry and water resources management.		
Ensure that the assessment of the types of training required to build *zoba* and sub-*zoba* capacities reflect the educational levels and area of interests of men and women.	Analysis of training needs.	Training needs identified, disaggregated by gender.
Output 1.2.2. Extension packages reviewed and updated to include best practices and other relevant materials through the provision of technical and financial support at national, *zoba*, sub-*zoba* and *kebabi* levels.		
Identify and address the needs of women and other vulnerable groups in the newly revised extension packages.	Gender analysis of the new extension packages.	Extension packages are gender-sensitive and address the needs of men and women equally.
Prioritise the training of women extension agents and highlight the gender-sensitive implementation of the packages in training.	Number of extension agents receiving training on the just transition to CSA and the establishment of effective working links with women and other vulnerable farmers, disaggregated by gender.	At least 80% of women extension agents receive training.
Output 1.2.3.A long-term strategy developed and implemented to monitor and evaluate climate-smart: i) water resources use and management; ii) agricultural practices; and iii) livestock productivity.		
Include socioeconomic and gender-disaggregated indicators and gender-disaggregated performance targets in the developed M&E methodology.	Number of gender-disaggregated targets and indicators in the M&E methodology.	All relevant targets and indicators are gender disaggregated.

Gender-related activity	Indicator	Target
Provide tailored training to women and other vulnerable users of landscapes.	Number of NARI staff, extension agents and local community members trained on the application of the M&E methodology, disaggregated by gender and social group.	At least 30% of trainees at all levels are women.
Output 2.1.1. Based on the assessments undertaken in Output 2.2.1: i) identify and map drought- and flood-prone areas; and ii) develop and implement community-based land-use and area development plans in the Tsilima plains and it supplement area.		
Enable women's voices to be heard during consultation processes with sub-*zoba* administration, KAAs, extension agents and local communities in the development of land-use and area development plans.	Number of stakeholders consulted during development of plans, disaggregated by gender and social group.	At least 50% of stakeholders consulted are women.
Output 2.1.2. Existing CBOs strengthened, including *inter alia* VACs, WUAs and farmer associations to coordinate local-level participation in CCA, land use and development planning.		
Work with women to foster the opportunities for greater representation of women in existing village committees, CBOs, and resource-user groups.	Number of women members of CBOs and resource-user groups.	At least one woman representative active in each CBO and resource-user group.
Conduct a gender analysis of local customs and by-laws on the use, protection, and conservation of key species.	Number of customs and by-laws gender mainstreamed.	All customs and by-laws are gender sensitive or gender transformative.
Allow diverse perspectives to be heard at training workshops, exchange of experiences, meetings, and discussion forums on the exchange of ideas, implementation and development of by-laws and the solving of common problems.	Number of forum and workshop participants, disaggregated by gender.	At least 30% of participants are women. Representatives from the NUEW are included in all discussion forums.
Output 2.1.3. Technical support provided to the *zoba* and sub-*zoba* administrations to inform the land redistribution process through the: i) classification and mapping of land according to potential land uses; and ii) assessment of the availability and quality of resources (e.g., soil and water).		
Give preference to women experts to attend training workshops on GIS skills, land surveying and classification of land for climate-resilient land-use planning.	Number of experts trained, disaggregated by gender.	At least 30% of experts trained are women.
Conduct a baseline assessment on: i) land ownership, disaggregated by the gender of the household head; and ii) preferred land uses, disaggregated by the gender of the household head.	Hectares of land under ownership, disaggregated by use and gender of household head.	Hectares of land under ownership, disaggregated by use and gender of household head, included in land classifications.
Output 2.2.1. Groundwater and surface water resources assessment undertaken and a groundwater monitoring strategy — including a system of data collection and information exchange on water use and projected demand — developed and implemented in the Upper Mereb catchment.		
Determine women's water demands for land uses and purposes in agriculture, housing, and livestock.	Number of people consulted, disaggregated by gender.	At least 50% of people consulted are women.
Conduct a gender analysis of the IWRM Action Plan.	Number of Action Plans gender mainstreamed.	Updated IWRM Action Plan is fully gender mainstreamed.
Provide training to the staff at WRD on how to mainstream gender into their data collection, risk assessments and water management.	Extent of gender mainstreaming in WRD's data collection, risk assessment, guidelines for water management, groundwater monitoring and adaptive management of the water sector.	WRD's activities include gender considerations and gender-disaggregated data.
Output 2.2.2. Hydro-meteorological stations established and/or refurbished at Mendefera, Dbarwa, Halhale, Tala, Dekitsuna, Adi Felesti, Shiketi and Gerteti.		

Gender-related activity	Indicator	Target
Prioritise training to women technical staff at NARI, extension agents, community members and meteorologists at the AMU and MSU on the collection and interpretation of climate data.	Number of people trained, disaggregated by gender.	At least 30% of people trained are women.
Output 2.2.3. Climate-smart watershed restoration and management measures identified and implemented, including: i) water harvesting and storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures.		
Include a gender analysis in the impact assessments on the construction of water infrastructure.	Gender analysis of impact of planned infrastructure.	Impact of planned infrastructure on men and women identified.
Enable the effective participation of women in community consultations to design water infrastructure.	Number of stakeholders consulted, disaggregated by gender.	At least 30% of participants are women.
		Representatives from the NUEW are included in all consultations.
Output 2.2.4. Local communities and households receive gender-sensitive training to undertake sustainable water use and management, including *inter alia* water harvesting and the construction and maintenance of hard and soft engineering interventions.		
Design training workshops and manuals to be gender-sensitive and to provide tailored training to women farmers.	Number of people receiving training, disaggregated by gender.	At least 50% of people trained are women.
	Number of farms selected for demonstration activities, disaggregated by the gender of the farmer.	At least 50% of farms selected for demonstration activities are owned by women.
	Number of gender-mainstreamed manuals developed.	All manuals include gender-related challenges and solutions.
Output 2.3.1.CSA practices — informed by research product generated under Output 1.1.3 and land-use and area development plans prepared under Output 2.1.1 — developed and transferred to farmers, including: i) drought- and disease-resistant varieties; ii) integrated crop-livestock systems; iii) conservation agriculture; iv) agroforestry; v) silvo-pasture; and vi) rangeland and livestock management.		
Conduct an assessment on women's land use.	Hectares of land under ownership, disaggregated by use and gender of household head.	Women's land use and main livelihood activities are identified to inform prioritisation of implemented CSA technologies.
Consult women in the format, location and timing of on-farm demonstrations and experience-sharing events and develop measures to ensure the effective participation of women.	Number of measures implemented to ensure effective participation of women farmers.	Measures developed that consider the gender-inclusiveness of the timing, location and format of on-farm demonstrations and experience-sharing events.
Include capacity building on gender issues in the training of the extension agents and CBOs who will oversee and coordinate community involvement in the implemented CSA technologies.	Extent of gender mainstreaming in the implementation of CCA interventions, CSA technologies and livestock production practices.	Coordination by extension agents and CBOs should include gender considerations.
Ensure that the training to local communities is gender-sensitive and provides tailored training to women and other vulnerable members of these communities.	Number of people receiving training, disaggregated by gender.	At least 50% of people trained are women.
Output 2.3.2. Alternative income-generating livelihoods identified and implemented in selected communities.		
Provide technical and financial support for implementing income-generating activities that takes into account women and men's different	Number of livelihood activities that are technically supported, disaggregated by gender of primary participants.	At least 50% of livelihood activities that are technically supported are those primarily engaged in by women.

Gender-related activity	Indicator	Target
livelihood activities and is tailored to their context.	Number of people receiving technical support, disaggregated by gender.	At least 50% of people receiving technical support are women.
Give preference to women when training community members on the value-addition activities.	Number of people receiving training, disaggregated by gender.	At least 50% of trainees should be women.
Provide access for women's businesses to markets in and outside the Tsilima and its upper catchment area.	Number of beneficiaries, disaggregated by gender and social group.	At least 70% of small businesses supported should be owned by people from vulnerable groups, including people with disabilities and at least 50% women.
Output 3.1.1. Public awareness-raising and education campaigns conducted on the Tsilima plains and its upper catchment area.		
Design the awareness-raising campaigns, radio programmes and education campaigns to reach as wide an audience as possible.	Number of community members reached, disaggregated by gender, language, level of education and age.	At least 80–100% of households and community members are reached.
Encourage women to participate in the development and broadcasting of farmer radio shows.	Number of people used as experts and presenters for farmer radio shows, disaggregated by gender.	At least 30% of people involved are women.
Output 3.1.2. Communication strategy developed and implemented for sharing lessons learned and best practices to: i) other *zobas*, sub-*zobas* and *kebabis*; and ii) high-level decision-making institutions.		
Specifically document the experiences of women in the monitoring of gender-disaggregated project indicators and all baseline assessments and analyses conducted as part of project activities.	Number of gender-disaggregated indicators monitored.	All project indicators should be gender disaggregated.
	Number of information-gathering activities that are gender sensitive.	All information-gathering activities should be gender sensitive.
Ensure the effective participation of women in community consultations with decision-makers on best practices and approaches for integrated landscape management and policy makers on integrating project interventions into regional and national policies and action plans.	Number of community members participating in consultations, disaggregated by gender.	At least 50% of participants are women.
		Representatives from the NUEW are included in all community consultations.
Output 3.1.3. Gender strategy developed and implemented that includes capacity building and enhancing the participation of women in the planning, selection, implementation and monitoring of integrated natural resource management (INRM) approaches and practices.		
Provide training to all project-appointed persons on mainstreaming gender issues into project activities and ensuring the effective participation of women in project decision-making.	Number of project officials trained, disaggregated by gender.	All project officials are trained.
Enable the effective participation and representation of women in the discussion forums supported or created to facilitate dialogue on gender issues between the CBOs, *kebabi* and sub-*zoba* administrations.	Number of forum members, disaggregated by gender.	At least 30% of participants are women.
		Representatives from the NUEW are included in all discussion forums.
Include a gender focal person in the project management unit.	Number of gender focal persons appointed.	One gender focal person appointed, preferably a woman.
Consult women when it comes to collating lessons learned from the experiences and coping strategies of communities to the effects of climate change.	Number of persons interviewed, disaggregated by gender.	At least 50% of people interviewed are women.

Innovativeness, sustainability, and potential for scaling up:

Innovativeness
Current disparate land-use systems will be transformed by effective, climate-resilient land-use planning and a landscape management approach that draws on traditional natural resource management knowledge and practices to support decision-making and that integrates both ecological and agricultural interventions. This will be supported by equipping extension aids and farmers through capacity-building initiatives that will provide training in new and improved agricultural technologies and international best practices.

Sustainability
This project has been designed to support the sustainability of the project interventions beyond the implementation period. A consultative approach supports the sustainability of CCA interventions beyond the duration of the project by ensuring that the long-term needs of vulnerable communities are prioritised. Local stakeholders were consulted during the PPG phase and similar consultations will be ongoing as part of the project implementation phase. In addition, the project design team engaged with relevant national stakeholders and experts to align activities with national priorities and development goals. The close involvement of numerous GoSE institutions and departments in the project's implementation will further promote the incorporation of the project's approaches into ongoing planning and strategies.

This project interventions include a strong emphasis on capacity building, training and institutional strengthening, particularly with regards to CCA. This will support long-term political and financial commitment of policy- and decision-makers to the project interventions. The project will strengthen the capacity of relevant government stakeholders and departments to plan, design and implement CCA interventions. The capacity building will be complemented by a strategy for maintaining technical capacity in the MoA, MoLWE and other relevant departments and institutions. These interventions will strengthen the institutional environment for planning CCA interventions both during and after the project implementation period.

This project will strengthen the research capacities of NARI and other institutions. The outcome of such research will inform and strengthen the evidence base for CCA interventions in Eritrea and will include *inter alia*: i) assessments of CSA, including useful and climate-resilient species under Outcome 1.1; and ii) groundwater and surface water assessments under Outcome 2.2. The knowledge that is generated through this research will promote the sustainability of project interventions. In addition, this knowledge will inform the design of future CCA interventions in Eritrea.

Strengthened capacity and an improved knowledge base will enable appropriate and timeous responses to climate change and the implementation of appropriate CCA interventions in pilot communities. These communities will also be trained on planning, implementing, and maintaining CCA interventions. As a result, these local stakeholders will have the capacity to sustain CCA interventions after LDCF resources are terminated. Moreover, the ecological and agricultural interventions implemented will provide livelihood benefits for local communities, thereby promoting continued ownership among these stakeholders. In addition, it is anticipated that the LDCF investments to strengthen the capacity of these stakeholders will support the sustainability and effectiveness of similar ongoing and future projects in Eritrea.

The strengthened capacity of ministries, departments and institutions will result in: i) improved generation and collation of information on SLM, SFM and IWRM; and ii) climate-resilient land-use planning, which will support technical staff in the MoA and MoLWE to apply the project approach on an ongoing basis. By implementing a community-based land-use planning and management system, the project will reduce uncertainty about the roles, obligations, costs, and benefits of the use of communal lands. Moreover, the development of such plans and by-laws will foster and support community and household ownership of project interventions, resulting in greater support from the project beneficiaries. Several agricultural and ecological interventions — including terraces, stone-walls, catchment-harvesting and inter-planted orchards — will be implemented at the community and household level. The maintenance of such interventions is relatively low cost and does not require technical skills, enabling ongoing operation and maintenance by local communities beyond project implementation. Incentives and disincentives that favour the adoption of CCA interventions will be developed through participatory, equitable systems and will be modified based on participatory adaptive management reviews.

Potential for scaling up

This project will implement a long-term strategy for monitoring and evaluating agricultural and ecological interventions for the MoA, MoLWE and relevant departments. Lessons learned and best practices from the project will be shared across the country to increase the project's impact. Public awareness-raising and education campaigns in Eritrea will disseminate the lessons learned and demonstrate the benefits of CCA interventions.

This project interventions— and the benefits derived from these interventions — are designed to be replicable in other areas of Eritrea and in other LDCs in the region. A 'learning-by-doing' approach will be adopted to build technical capacity for CCA. This will address climate change priorities at sub-*zoba*, *zoba* and national levels, while also informing national development plans and policies. The direct involvement of government institutions will demonstrate the potential for integrating approaches and strategies proposed under this project into ongoing planning processes. To facilitate effective replication by ministries such as the MoLWE and MoA lessons learned, and knowledge generated during the project implementation will be documented on a national information-sharing platform and be disseminated. In addition, generating evidence on the cost-effectiveness of CCA interventions will facilitate policy and budgetary adjustments.

Knowledge and awareness-raising activities will be undertaken to improve the understanding of climate change among academics and the public. These activities will promote replication of the CCA interventions outside of the Tsilima plains and its upper catchment area. Importantly, the project design is also aligned with national policies, strategies, and legislation for Eritrea, which will further facilitate replication.

The cost-effectiveness of CCA interventions will promote replication of these interventions among vulnerable local communities who do not have access to financial capital. Moreover, a participatory approach will be adopted through LDCF resources, thereby promoting ownership of CCA interventions among local and national stakeholders. This ownership will support the integration of cost-effective adaptation interventions into local land-use and adaptation planning and sectoral strategies, budgets, and plans.

This project's interventions will increase the availability of information and planning tools to support future CCA initiatives in Eritrea. Moreover, policies and community by-laws will be developed that will contribute to the technical knowledge base on land redistribution, thereby facilitating replication. While the by-laws will be designed for a particular ecosystem, they will facilitate land redistribution throughout the surrounding Central Highlands Zone, where the traditional *diessa*l and tenure system is still in place. The tools and lessons learned from applying the Land Proclamation will be adapted for implementation in other areas in Eritrea, with support from the ministries involved.

V. PROJECT RESULTS FRAMEWORK

Table 6. Project results framework

This project will contribute to the following Sustainable Development Goal (s): 1, 2, 5, 6, 13 & 15				
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): UNSDCF Outcome 4: *By 2026, people in Eritrea have benefited from climate-resilient, sustainable environment and natural resources management.*				
	Objective and outcome indicators	**Baseline**	**Mid-term target**	**End of project target**
Project Objective:	To integrate adaptation measures into ecosystem restoration and agricultural production systems to address climate change in Eritrea and secure the benefits of the NFSS and IWRM Action Plan.			
	Mandatory LDCF Core Indicator 1: # direct project beneficiaries disaggregated by gender (individual people)	**Zero** people	**~30,500** people, of which ~18,300 (60%) women and 12,200 men	**74,416** people, of which 35,848 women and 38,568 men
	Mandatory LDCF Core Indicator 2: Area of land managed for climate resilience (ha)	**Zero** ha	**4,500** ha	**9,000** ha
	Mandatory LDCF Core Indicator 3: # policies/plans that will mainstream climate resilience	Current plans, strategies, policies, and programmes do not integrate climate resilience considerations.	At least **one** policy framework includes adaptation measures and associated budgets.	At least **two** policy frameworks — NFSS and IWRM Action Plan — include adaptation measures and associated budgets.
	Mandatory LDCF Core Indicator 4: # people trained disaggregated by gender	**Zero** people	**~1,500** people, of which ~750 (50%) women and ~750 men	**3,142** people, of which 1,571 (50%) women and 1,571 men
Project Component 1	**Information about the impacts of ecosystem degradation in aggravating vulnerability to climate change risks and reducing the resilience of development gains understood and integrated into key decision-making processes.**			
Outcome1.1	**Indicator 5:** Number of research products on CSA.	**Zero** research products	**Two** research products	**Four** research products
Outputs to achieve Outcome 1.1	**1.1. Capacity of research institutions to undertake climate-related research increased.** 1.1.1. Capacity and resource needs assessment undertaken, and capacity development strategy and training programme developed and implemented for NARI, including training on climate change and IWRM and on research and data collection, analysis and the packaging or publication of information. 1.1.2. Network and information-sharing platform on CCA and CSA developed at national, *zoba* and sub-*zoba* levels. 1.1.3. Technical and financial support provided to NARI in association with other academic and research institutions to conduct research and produce research reports on CSA and production systems, including but not limited to: i) drought-resistant and early-maturing crops; ii) sustainable water-use and conservation practices; iii) conservation agriculture practices, including tillage management and soil fertility; iv) sustainable landscape management; and v) livestock production and grazing management. 1.1.4. Climate information and monitoring systems developed in association with relevant line ministries, departments — in particular the MSU of the MoTC and the AMU of the MoA — and local communities based on data received from hydro-meteorological stations installed under Output 2.2.2.			
Outcome 1.2	**Indicator 6:** Improved capacity score of extension services to provide knowledge-based climate-smart advice.	*To be verified during year 1 of project implementation.*	**Score of 1** as per UNDP Capacity Scorecard.	**Score of 3** as per UNDP Capacity Scorecard.
Outputs to achieve Outcome 1.2	**1.2. Capacity of extension service institutions to provide knowledge-based climate-smart extension services to agriculture, livestock production and water management increased.** 1.2.1. Capacity and resource needs assessment, development and training programmes implemented in institutions involved in extension services on *inter alia* sustainable land, forestry, and water resources management. 1.2.2. Extension packages reviewed and updated to include best practices and other relevant materials through the provision of technical and financial support at national, *zoba*, sub-*zoba* and *kebabi* levels. 1.2.3. A long-term strategy developed and implemented to monitor and evaluate climate-smart: i) water resources use and management; ii) agricultural practices; and iii) livestock productivity.			
Project Component 2	**Climate-resilient land-use planning to support the adoption of agricultural and ecological interventions.**			

Outcome 2.1	**Indicator 7:** Number of land-use and area development plans developed and operationalised.	Land-use and area development plans have not been developed.	At least **one** land-use and area development plan developed and operationalised in target areas.	At least **three** land-use and area development plans developed and operationalised in target areas.
Outputs to achieve Outcome 2.1	**2.1. Climate-resilient land-use planning implemented over 9,000 ha of the Tsilima Region.** 2.1.1. Based on the assessments undertaken in Output 2.2.1: i) identify and map drought- and flood-prone areas; and ii) develop and implement community-based land-use and area development plans in the Tsilima Region. 2.1.2. Existing CBOs strengthened, including *inter alia* VACs, WUAs and farmer associations to coordinate local-level participation in CCA, land use and development planning. 2.1.3. Technical support provided to the *zoba* and sub-*zoba* administrations to inform the land redistribution process through the: i) classification and mapping of land according to potential land uses; and ii) assessment of the availability and quality of resources (e.g., soil and water).			
Outcome 2.2	**Indicator 8:** % increase in availability of water for irrigation.	~**28 m³**of water	**32 m³** of water (at least 15% increase from baseline)	**36 m³** of water (at least 30% increase from baseline)
	Indicator 9: Increase in area under irrigation.	**1,052 ha** of irrigated land	**1,210 ha** of irrigated land (at least 15% increase from baseline)	**1,370 ha** of irrigated land (at least 30% increase from baseline)
Outputs to achieve Outcome 2.2	**2.2. Integrated water management operationalised across the Tsilima Region, increasing water availability and land under irrigation.** 2.2.1. Groundwater and surface water resources assessment undertaken and a groundwater monitoring strategy — including a system of data collection and information exchange on water use and projected demand — developed and implemented in the Upper Mereb catchment. 2.2.2. Hydro-meteorological stations established and/or refurbished at Mendefera, Dbarwa, Halhale, Tala, Dekitsuna, Adi Gebru, Adi Felesti, Shiketi and Gerteti. 2.2.3. Climate-smart watershed restoration and management measures identified and implemented, including: i) water harvesting and storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures. 2.2.4. Local communities and households receive gender-sensitive training to undertake sustainable water use and management, including *inter alia* water harvesting and the construction and maintenance of hard and soft engineering interventions.			
Outcome 2.3	**Indicator 10:** % increase in the number of farmers taking up CSA practices — disaggregated by gender.	*To be verified during year 1 of project implementation.*	At least **25% increase** in number of farmers trained in CSA.	At least **50% increase** in number of farmers trained in CSA technologies. At least **30% of livestock keepers** adopt alternative livestock management. At least **20% increase** in number of farmers in target villages consistently applying CSA technologies introduced by the project.
	Indicator 11: Improved score on the "Vulnerability and risk perception index" — disaggregated by gender.	*To be verified during year 1 of project implementation.*	**Score of 1** as per VRA[17].	**Score of 3**as per VRA.
Outputs to achieve Outcome 2.3	**2.3. Increased food production through the implementation of CSA practices across the Tsilima Region.** 2.3.1. CSA practices — informed by research product generated under Output 1.1.3 and land-use and area development plans prepared under Output 2.1.1 — developed and transferred to farmers, including: i) drought- and disease-resistant varieties; ii) integrated crop-livestock systems; iii) conservation agriculture; iv) agroforestry; v) silvo-pasture; and vi) rangeland and livestock management. 2.3.2. Alternative income-generating livelihoods identified and implemented in selected communities.			
Project Component 3	**Knowledge management and awareness-raising.**			

[17]VRA, Vulnerability Reduction Assessment, as per guidance in **Annex 20.**

Outcome 3.1	**Indicator 12:** % of targeted population are aware of predicted adverse impacts of climate change and provide appropriate responses (score) — disaggregated by gender.	*To be verified during year 1 of project implementation*	Increased level of awareness in target population.	Increased level of awareness in target population (score of 2 = moderate awareness).
	Indicator 13: Consistency of project gender mainstreaming with project plans.	*Not applicable*	GAP implemented and gender strategy developed.	GAP and gender strategy fully implemented, with equal participation of men and women in all project activities.
Outputs to achieve Outcome 3.1	**3.1. Increased monitoring, knowledge sharing and awareness at *zoba*, sub-*zoba*, *kebabi* and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) CSA technologies and measures; and iv) sustainable natural resource use and management.** 3.1.1. Public awareness-raising and education campaigns conducted in the Tsilima Region. 3.1.2. Communication strategy developed and implemented for sharing lessons learned and best practices to: i) other *zobas*, sub-*zobas* and *kebabis*; and ii) high-level decision-making institutions. 3.1.3. Gender strategy developed and implemented that includes capacity building and enhancing the participation of women in the planning, selection, implementation and monitoring of CCA approaches and practices.			
Project component: M&E	**Monitoring & Evaluation**			
Set of M&E activities	**Indicator 14:** Continuous project M&E conducted in compliance with UNDP and GEF, with evaluative knowledge made available to project partners.	Inception workshop and report by 30 April 2024	Independent mid-term review (MTR): final MTR report and MTR terms of reference (ToR) available by 30 August 2026. GEF Project Implementation Report (PIR) completed annually.	Independent terminal evaluation (TE): final TE report and TE ToR available by 31 October 2028. Terminal GEF PIR.

VI. MONITORING AND EVALUATION (M&E) PLAN

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP (including guidance on GEF project revisions) and UNDP Evaluation Policy**The UNDP Country Office is responsible for ensuring full compliance with all UNDP project M&E requirements including project monitoring, UNDP quality assurance requirements, quarterly risk management, and evaluation requirements.**

Additional mandatory GEF-specific M&E requirements will be undertaken in accordance with the GEF Monitoring Policy and the GEF Evaluation Policy and other relevant GEF policies[18]. The M&E plan and budget included below will guide the GEF-specific M&E activities to be undertaken by this project.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed – including during the Project Inception Workshop - and will be detailed in the Inception Report.

Minimum project monitoring and reporting requirements as required by the GEF:

Inception Workshop and Report: A project inception workshop will be held within 2 months from the First disbursement date, with the aim to:

a. Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
b. Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
c. Review the results framework and monitoring plan.
d. Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP and other stakeholders in project-level M&E.
e. Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework (where relevant) and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
f. Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
g. Plan and schedule Project Board meetings and finalize the first-year annual work plan. Finalize the ToR of the Project Board.
h. Formally launch the Project.

GEF Project Implementation Report (PIR):
The annual GEF PIR covering the reporting period July (previous year) to June (current year) will be completed for each year of project implementation. UNDP will undertake quality assurance of the PIR before submission to the GEF. The PIR submitted to the GEF will be shared with the Project Board. UNDP will conduct a quality review of the PIR, and this quality review and feedback will be used to inform the preparation of the subsequent annual PIR.

LDCF Core Indicators:
The LDCF Core indicators included as **Annex 15** will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior to MTR and TE. Note that the project team is responsible for updating the indicator status. The updated monitoring data should be shared with MTR/TE consultants prior to required evaluation missions, so these can be used for subsequent ground truthing. The methodologies to be used in data collection have been defined by the GEF and are available on the GEF website.

[18] See https://www.thegef.org/gef/policies_guidelines

Independent Mid-term Review ( ): The terms of reference, the review process and the final MTR report will follow the standard UNDP templates and UNDP guidance for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC).

The evaluation will be 'independent, impartial and rigorous'. The evaluators that UNDP will hire to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project under review.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the evaluation process. Additional quality assurance support is available from the BPPS/NCE-VF Directorate.

The final MTR report and MTR ToR will be publicly available in English and will be posted on the UNDP ERC by 30 December 2026. A management response to MTR recommendations will be posted in the ERC within six weeks of the MTR report's completion.

Terminal Evaluation (TE):
An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Center. TE should be completed 3 months before the estimated operational closure date, set from the signature of the ProDoc and according to the duration of the project. Provisions should be taken to complete the TE in due time to avoid delay in project closure. Therefore, TE must start no later than 6 months to the expected date of completion of the TE (or 9 months prior to the estimated operational closure date).

The evaluation will be 'independent, impartial and rigorous'. The evaluators that UNDP will hire to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project being evaluated.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the BPPS/NCE-VF Directorate.

The final TE report and TE ToR will be publicly available in English and posted on the UNDP ERC by 29 February 2029. A management response to the TE recommendations will be posted to the ERC within six weeks of the TE report's completion.

Final Report:
The project's terminal GEF PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information:
To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy[19] and the GEF policy on public involvement[20].

[19] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/
[20] See https://www.thegef.org/gef/policies_guidelines

Monitoring Plan: The project results, corresponding indicators and mid-term and end-of-project targets in the project results framework will be monitored by the PMU annually, and will be reported in the GEF PIR every year, and will be evaluated periodically during project implementation. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. Project risks, as outlined in the risk register, will be monitored quarterly.

Table 7. Monitoring plan

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
Project objective from the results framework: To integrate adaptation measures into ecosystem restoration and agricultural production systems to address climate change in Eritrea and secure the benefits of the NFSS and IWRM Action Plan.	***Indicator 1:*** # direct project beneficiaries disaggregated by gender (individual people) (Mandatory LDCF core indicator 1).	***Mid-term:*** 30,500 people, of which 18,300 (60%) women and 12,200 men. ***End of project:*** 74,416 people, of which 35,848 women and 38,568 men.	At least 60% of beneficiaries should be women.	Consultations with local government institutions and CBOs Surveys	Annually	Project Manager (PM) MoLWE	Reports from consultation processes Survey results PM's monitoring progress reports	***Assumptions:*** Project team and evaluators will have access to government officers, local communities, project sites and documents to allow review of implementation progress. ***Risks:*** Lack of access to stakeholder informants, project sites and documentation will hamper monitoring.
	Indicator 2: Area of land managed for climate resilience (ha) (Mandatory LDCF core indicator 2).	***Mid-term:*** 4,500 ha ***End of project:*** 9,000 ha		Consultations with central and local government institutions and CBOs Surveys	Annually	PM MoLWE	Reports from consultation processes Survey results PM's monitoring progress reports	
	Indicator 3: # policies/plans that will mainstream climate resilience (Mandatory GEF indicator 3).	***Mid-term:*** At least one policy framework includes adaptation measures and associated budgets. ***End of project:*** IWRM Action Plan and NFSS		Consultations with government institutions Review of strategies, policies, programmes and budgets	Annually	PM MoLWE	Strategies, policies, programmes and budgets Review reports/ results PM's monitoring	

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
		include adaptation measures and associated budgets.					progress reports	
	Indicator 4: # of people trained, disaggregated by gender	***Mid-term:*** ~1,500 people ***End of project:*** 3,142 people	At least 50% of the people trained should be women. The project interventions enable training sessions attended by: i)~236 technical staff from government departments and ministries at the local, regional and national levels; ii) ~2621 community members and members of resource user groups; iii) ~210 extension agents and other technical officers; and iv) ~75 staff members from the AMU and MSU. Some of these training sessions may target the same people twice; the actual number of people trained could therefore be less than the targets.	Surveys	Annually	PM MoLWE	PM's monitoring progress reports Attendance records from training sessions.	
Project Outcome 1.1	***Indicator 5:*** Number of research products on CSA.	***Mid-term:*** Two research products.	The indicator relates to Outcome 1.1 — *capacity of research institutions to undertake climate-*	Consultations and interviews with NARI	Annually	PM MoLWE	Research products	***Assumptions:*** Trainees leave training with improved capacity to implement new approaches and skills.

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
		End of project: Four research products.	*related research increased.*				Progress reports from NARI PM's monitoring progress reports	Staff will apply outcomes of climate-related research. Climate information and monitoring system established during this project will support CSA and production systems and the issuing of early warnings. Research products such as toolkits and guidelines on implementing climate-smart methods/ approaches at farm-level will be based on scientific research (including on-farm research and demonstrations) undertaken by NARI. ***Risks:*** Training may be hampered by the non-release of officers to attend training. Training is conducted but implementation capacity remains constrained.
Project Outcome 1.2	***Indicator 6:*** Improved capacity score of extension services to provide knowledge-based climate-smart advice.	***Mid-term:*** Score of 1 as per UNDP Capacity Scorecard. ***End of project:*** Score of 3 as per UNDP Capacity Scorecard.	The indicator relates to Outcome 1.2 — *capacity of extension service institutions to provide knowledge-based climate-smart extension services to agriculture, livestock production and water*	UNDP Capacity Scorecard	Annually	PM MoLWE	UNDP Capacity Scorecard PM's monitoring progress reports	

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
			management increased. Its targets will be verified during Year 1 of project implementation.					
Project Outcome 2.1	***Indicator 7:*** Number of land-use and area development plans developed and operationalised.	***Mid-term:*** At least one land-use and area development plan developed and operationalised in target areas. ***End of project:*** At least three land-use and area development plans developed and operationalised in target areas.	The indicator relates to Outcome 2.1 — *climate-resilient land-use planning implemented over 9,000 ha of the Tsilima Region.*	Consultation process with *kebabi* and sub-*zoba* administrations, local communities and CBOs to develop land-use and area development plans, utilising GIS maps and land soil classification survey results	Annually	PM MoLWE	Land-use and area development plans PM's monitoring progress reports	***Assumptions:*** Public institutions, NGOs and resource users will be willing to adopt a partnership approach and work collaboratively to plan and implement land-use planning and CCA interventions in the Tsilima Region.
Project Outcome 2.2	***Indicator 8:*** % increase in availability of water for irrigation.	***Mid-term:*** 32 m^3 of water (at least 15% increase from baseline). ***End of project:*** 36 m^3 of water (at least 30% increase from baseline).	The indicators relate to Outcome 2.2 — *integrated water management operationalised across the Tsilima Region, increasing water availability and land under irrigation*. The targets are to be verified during Year 1 of project implementation.	Survey of water available for irrigation	Annually	PM MoLWE	Survey results PM's monitoring progress reports	***Assumptions:*** Implementing Partner and Project Team can identify qualified service providers to conduct the surveys. ***Risks:*** The Implementing Partner's capacity to conduct and/or supervise the land and water surveys remains limited.
	Indicator 9: Increase in area under irrigation.	***Mid-term:*** 1,210 ha of irrigated land (at least 15% increase from baseline).		Survey of land under irrigation	Annually	PM MoLWE	Survey results PM's monitoring	

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
		End of project: 1,370 ha of irrigated land (at least 30% increase from baseline).					progress reports	
Project Outcome 2.3	***Indicator 10:*** % increase in the number of farmers taking up CSA practices — disaggregated by gender.	***Mid-term:*** At least 25% increase in number of farmers trained in CSA. ***End of project:*** At least 50% increase in number of farmers trained in CSA technologies. At least 30% of livestock keepers adopt alternative livestock management. At least 20% increase in number of farmers in target villages consistently applying CSA technologies introduced by the project.	The indicators relate to Outcome 2.3 — *increased food production through the implementation of CSA practices across the Tsilima Region*. Targets are to be verified during year 1 of project implementation.	Survey of farmers adopting CSA practices, providing information on the number of people: % women % of targeted population	Annually	PM MoLWE	Survey results PM's monitoring progress reports	***Assumptions:*** Communities see CSA as desirable given development imperatives and lifestyle preferences, thus supporting project interventions. CSA practices are cost-effective. ***Risks:*** Natural disasters such as droughts and floods reverse the investments made by farmers.

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
	Indicator 11: Improved score on the "Vulnerability and risk perception index" — disaggregated by gender.	***Mid-term:*** score of 1 as per VRA[21]. ***End of project:*** score of 3 as per VRA.		VRA	Annually	PM MoLWE	VRA report PM's monitoring progress reports	***Assumptions:*** Stakeholders cooperate to facilitate successful conduct of the VRA. ***Risks:*** Failure to conduct VRA due to lack of cooperation from the relevant stakeholders.
Project Outcome 3.1	***Indicator 12:*** % of targeted population are aware of predicted adverse impacts of climate change and provide appropriate responses (score) — disaggregated by gender.	***Mid-term:*** Increased level of awareness in target population (1). ***End of project:*** Increased level of awareness in target population (2).	The indicator relates to Outcome 3.1 — *increased monitoring, knowledge sharing and awareness at* zoba, *sub*-zoba, kebabi *and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) CSA technologies and measures; and iv) sustainable natural resource use and management.* Responses are scored as follows: 1 = No awareness level (less than 50% correct) 2 = Moderate awareness level (50–75% correct)	Survey providing information on the number of people: % women % of targeted population	Annually	PM MoLWE	Survey results PM's monitoring progress reports	***Assumptions:*** Project team and evaluators have access to communities and other stakeholders to conduct awareness surveys. ***Risks:*** Lack of access to stakeholders and other informants limits information for surveys.

[21]VRA, Vulnerability Reduction Assessment, as per guidance in **Annex 20**.

Results monitoring	Indicators	Targets	Description of indicators and targets	Data source/collection methods	Frequency	Responsible for data collection	Means of verification	Risks/assumptions
			3 = High awareness level (over 75% correct). Results will be extrapolated from the VRA to be conducted under Outcome 2.1. Targets to be verified during Year 1 of project implementation.					
	Indicator 13: Consistency of project gender mainstreaming with project plans.	***Mid-term:*** GAP implemented, and gender strategy developed. ***End of project:*** GAP and gender strategy fully implemented with equal participation of men and women in project activities.	The indicator relates to Outcome 3.1 — *increased monitoring, knowledge sharing and awareness at* zoba, *sub*-zoba, kebabi *and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) CSA technologies and measures; and iv) sustainable natural resource use and management*. This indicator is also cross-cutting for all project activities.	Survey providing information on the number of people: % women % of targeted population GAP and gender strategy	Annually	PM MoLWE	Survey results PM's monitoring progress reports	***Assumptions:*** Project team and evaluators have access to communities and other stakeholders to conduct surveys. Women are given the opportunity to participate in project activities. ***Risks:*** Lack of access to stakeholders and other informants limits information for surveys. Cultural practices and domestic duties might limit the full involvement of women.

Monitoring Activity			
	Frequency/Timeframe	**Expected Action**	**Partners (if joint)**
Inception Workshop and Report	Inception Workshop within 2 months of the First Disbursement	As per above description	
Track results progress (see above table for details)	Annually and at mid-point and closure	Slower than expected progress will be addressed by project management.	
Monitor and Manage Risk	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.	
Monitor*[project safeguards management frameworks and/or plans and gender action plans, implementation action plan]*	ongoing		
Supervision Missions	Annually		
Learning and Learning Missions	As needed	Relevant lessons are captured by the project team and used to inform management decisions.	
Annual Project Quality Assurance	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.	
Review and Make Course Corrections	At least annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.	
Annual GEF Project Implementation Report (PIR)	Annually typically between June-September	Mandatory contribution by Project Team, CO and RTA. Strengths and weaknesses will be reviewed by project management and used to inform decisions to improve project performance	
Project Review (Project Board)	*Annually*	Any quality concerns or slower than expected progress should be discussed by the project board and management actions agreed to address the issues identified.	

Table 8. Evaluation Plan

Evaluation Title	Partners (if joint)	Related Strategic Plan Output	UNSDCF/CPD Outcome	Planned Completion Date	Key Evaluation Stakeholders
Independent Mid-Term Review (MTR)	*N/A*	*Poverty and Inequality, Resilience, Environment, Gender Equality*	UNSDCF Outcome 4: *By 2026, people in Eritrea have benefited from climate-resilient, sustainable environment and natural resources management*	December 2026	*MoFND, MoLWE, MoA, MoLG, FWA, Debub Administration, NUEW*
Independent Terminal Evaluation (TE)	*N/A*	*Poverty and Inequality, Resilience, Environment, Gender Equality*	UNSDCF Outcome 4: *By 2026, people in Eritrea have benefited from climate-resilient, sustainable environment and natural resources management*	February 2029	*MoFND, MoLWE, MoA, MoLG, FWA, Debub Administration, NUEW*

Table 9. M&E budget

GEF M&E requirements to be undertaken by Project PMU	Indicative costs (US$)
Inception workshop and report	***Inception workshop*** LDCF grant: US$10,000 ***Inception report*** LDCF grant: none Co-financing: none
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	LDCF grant: none Co-financing: none
M&E required to report on progress made in reaching LDCF indicators and project results included in the project results framework	***Mid-term*** LDCF grant: US$5,000 Co-financing: none ***Terminal*** LDCF grant: US$5,000 Co-financing: none
NIM audit as per UNDP audit policies, covered in PMU component of budget	LDCF grant: US$3,000/yr (for 5 yrs = US$15,000) Co-financing: none
Lessons learned and knowledge generation	LDCF grant: US$3,000/yr (for 3 yrs in year 2, 3, & 4 = US$9,000) Co-financing: none
Preparation of the annual GEF PIR	LDCF grant: none Co-financing: none
Monitoring of indicators in project results framework	LDCF grant: none Co-financing: US$4,000/yr (for 5 yrs = US$20,000)
Monitoring of environmental and social risks and corresponding management plans as relevant	LDCF grant: US$ 3,500 /yr (for 4 yrs in year 2, 3, 4 & 5 = US$14,000) Co-financing: none
Monitoring of GAP	LDCF grant: US$5,000/yr (for 3 yrs in year 2, 4 & 5 = US$15,000) Co-financing = none
Monitoring of Stakeholder Engagement Plan& workshop	***Monitoring*** LDCF grant: US$5,000/yr (for 5 yrs = US$25,000) Co-financing = none ***Workshop*** LDCF grant: US$7,000/yr (for 5 yrs = US$35,000) Co-financing = none
Addressing environmental and social grievances	LDCF grant: none Co-financing: none
Project Board meetings	GEF grant: none Co-financing: none
Supervision missions	LDCF grant: none Co-financing: US$2,000/yr (for 5 yrs = US$10,000)
Oversight missions	LDCF grant: none

GEF M&E requirements to be undertaken by Project PMU	Indicative costs (US$)
	Co-financing: US$2,000/yr (for 5 yrs – US$10,000)
Learning missions	LDCF grant: none Co-financing: none
Independent MTR	LDCF grant: US$45,000 Co-financing: none
Independent TE	LDCF grant: US$55,000 Co-financing: none
Workshops for knowledge management as outlined in Component 3	LDCF grant: US$52,500 Co-financing: none
TOTAL indicative COST	LDCF grant: US$290,500 Co-financing: US$20,000

VII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Section 1: General roles and responsibilities in the projects' governance mechanism

Implementing Partner (IP): The IP for this project is **MoLWE**. The MoLWE will work closely with the MoA, the MoLG/*zoba* Debub and the FWA to deliver specific project components as outlined in the project strategy.

The IP is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

The IP is responsible for executing this project. Specific tasks include:

- Project planning, coordination, management, monitoring, evaluation, and reporting. This includes providing all required information and data necessary for timely, comprehensive, and evidence-based project reporting, including results and financial data, as necessary. The IP will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
- Overseeing the management of project risks as included in this project document and new risks that may emerge during project implementation.
- Procurement of goods and services.
- Financial management, including overseeing financial expenditures against project budgets.
- Approving and signing the multiyear workplan.
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

To ensure smooth project implementation, a MoLWE Portfolio Implementation Unit (PIU) has been established after the consultative and review process that was conducted in November 2022. The PIU will be overseen by the Eritrean GEF Operational Focal Point at the MoLWE. In addition to the technical team, the unit has a supporting team that includes an accountant, a cashier, an M&E officer, and a procurement officer The PIU will coordinate the work planning process and be accountable to the National Steering Committee and to UNDP with regards to the use of GEF resources allocated for this project. The PIU will review and validate the annual reports through the PIR and support the National Steering Committee in its role as a decision-making structure for the review and approval of annual workplans and spending thresholds and in its role of managing conflict.

National Project Steering Committee:
A GEF Project National Steering Committee, with the mandate to provide high-level oversight over all GEF-financed, UNDP-managed projects, has been established. Members of National Steering Committee are:

- the **Ministry of Land, Water and Environment (MoLWE)** as Chair and host of the GEF Political and Operational Focal Point and PIU
- the **Ministry of Finance and National Development** as Development Partner/Senior Supplier
- the **Ministry of Agriculture as** Development Partner/Senior Supplier
- the **Forestry and Wildlife Authority** as Development Partner/Senior Supplier
- the **Ministry of Local Government** as the Beneficiary representative;
- The **National Union of Eritrean Women** as the Beneficiary representative;
- the **UNDP** as the GEF Agency.

Other members of the National Steering committee may be co-opted as necessary. The Portfolio National Steering Committee will meet at least once a year.

Responsible Party:
The Responsible Party for the execution of day-to-day project activities will be the Southern Region Administration (*zoba* Debub) under MoLG, with support from the relevant sub-*zoba* and *kebabi* administrations and other relevant technical teams across government entities serving as technical executing institutions.

Project stakeholders and target groups:

Stakeholders were identified and consulted during the PPG phase in 2016 and the project revision and gender mainstreaming phase in 2022 in order to assess needs, expectations and to ensure their consent. The key stakeholders identified thus far include: i) government authorities at national and regional (*zoba)* administration and local (*kebabi* administration) levels; ii) land and other natural resource users of various types, including farmer associations, water user associations and village agricultural committees; iii) decision-makers; and iv) civil society groups, including women's groups. A multi-stakeholder approach to decision-making will be promoted. Stakeholders will be involved in the project as set out in the section on *Stakeholder engagement and south-south* cooperation (Section III) and the Stakeholder Engagement Plan (**Annex 8**).

The key community institution at village level is the *kebabi* administration, which encompasses a village/area administrator, an executive director, and different communities. To increase the village or *kebabi*-level community institutions capacity to plan, implement and monitor and evaluate CSA, the project will focus on the development of effective and innovative community-based land-use planning at the landscape level. The aim is to enable rural communities to: i) build on their indigenous resource management knowledge; ii) raise their understanding of the impacts of climate change on livelihoods and natural resources; iii) create an internal demand to address the problem through the development and adoption of locally appropriate CSA practices; and iv) prepare their own land-use and investment plans for restoring, sustaining and enhancing the productive capacity and protective functions of their landholdings. To enable this, existing structures at the local level — including VACs, CBOs, and farmer associations — will be strengthened. They will also coordinate local-level participation in CCA, land use and development planning. A forum will be established for discussions between CBOs of neighbouring KAAs to facilitate the flow of information between adjacent communities to exchange ideas and lessons learned and discuss common problems.

Community-based planning exercises will be undertaken to update existing livelihood maps. In addition, community consultations will be undertaken to prioritise climate and related risks through synthesising community observations, traditional knowledge and scientific knowledge obtained. Community members will be trained in household data collection and relevant community institutions will be strengthened, resulting in a functional community based EWS.

Intensive training will be provided to farmers, *kebabi* administrators and various village committee members throughout the project area focusing on: i) the landscape approach; ii) the benefits thereof for the livelihoods of the upper as well as lower catchment including the plain; iii) community-based land-use planning that involves all stakeholders and is particularly gender sensitive; and iv) the skills required in conflict resolutions, negotiations and dialogue.

Demonstration sites will be developed on farmers' fields which will focus on testing CSA practices, CCA and soil and water conservation measures. Consequently, farmers will benefit from the close involvement of extension agents and researchers who will participate in demonstration activities, for example the introduction of new drought- and pest-resistant crop varieties and fast-maturing seed varieties. The project will bring researchers from NARI, farmers, and extension agents together to foster coordination and partnerships. Furthermore, user-friendly knowledge products will be developed and disseminated to raise awareness at different levels on the specific climate change risks facing *zoba* Debub, though the awareness-raising campaign under Component 3.

UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes overseeing project execution undertaken by the Implementing Partner to ensure that the project is being carried out in accordance with UNDP and GEF policies and procedures and the standards and provisions outlined in the Delegation of Authority (DOA) letter for this project. **The UNDP GEF Executive Coordinator, in consultation with UNDP Bureaus and the Implementing Partner, retains the right to revoke the project DOA, suspend or cancel this GEF project.** UNDP is responsible for the Project Assurance function in the project governance structure and presents to the Project Board and attends Project Board meetings as a non-voting member

Section 2: Project governance structure

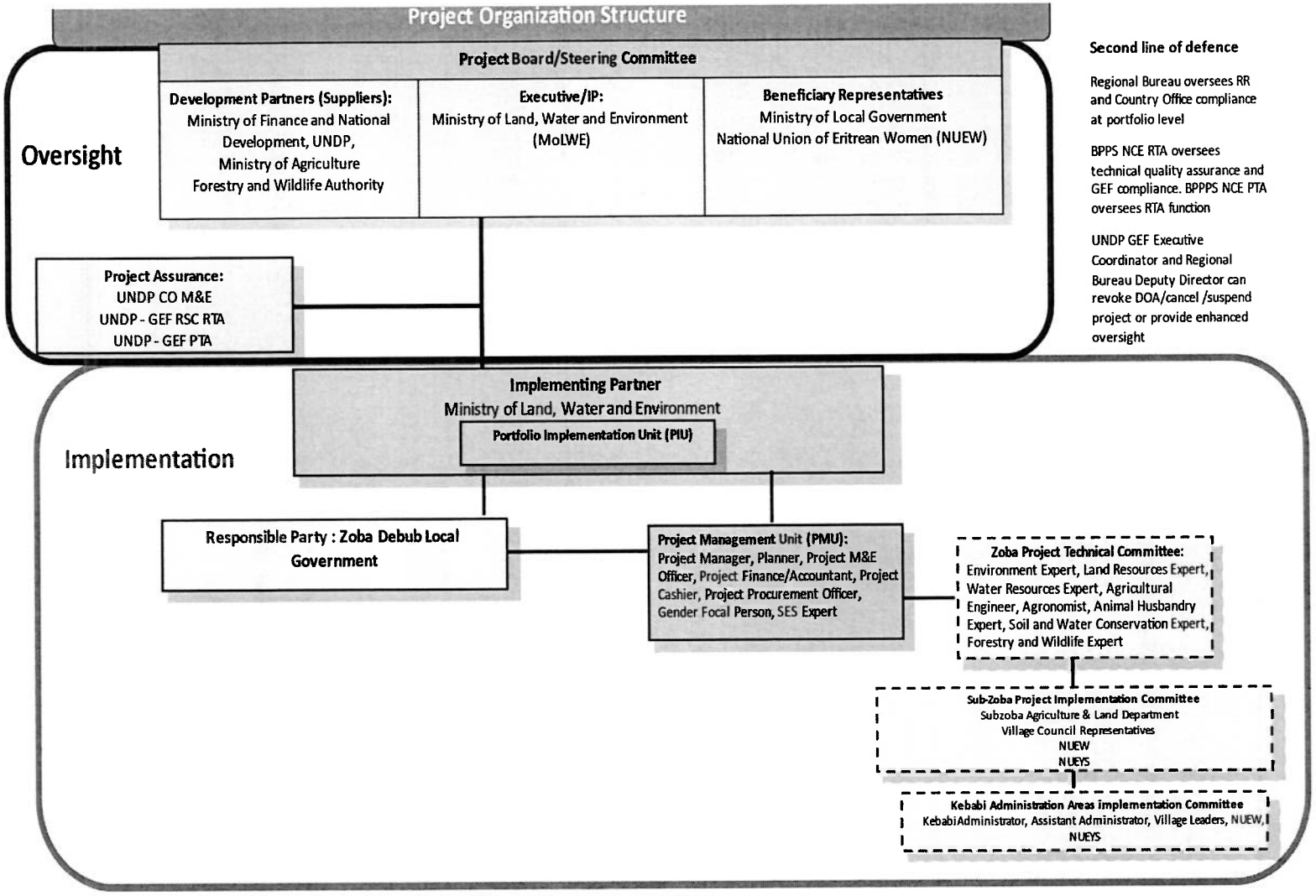
This project will be implemented under the National Implementation Modality with the GoSE, in particular the MoLWE, as IP. This project will be overseen by the National Project Steering Committee, which comprises

representatives from the MoLWE (Executive), the MoFND (Development partner/Senior Supplier), the MoA (evelopment partner/Senior Supplier), the MoLG (Beneficary representative), the FWA (Development partner/senior supplier), the the *zoba* Debub administration's Department of Agriculture and Land (Responsible party) and the National Union of Eritrean Women (Beneficiary representative) and the UNDP (Development partner/Senior supplier).

The UNDP Resident Representative assumes full responsibility and accountability for oversight and quality assurance of this Project and ensures its timely implementation in compliance with the GEF-specific requirements and UNDP's Programme and Operations Policies and Procedures (POPP), its Financial Regulations and Rules and Internal Control Framework. A representative of the UNDP Country Office will assume the assurance role and will present assurance findings to the National Steering Committee, and therefore attends the National Steering Committee meetings as a non-voting member.

The project organisational structure is as follows:

Figure 2. Project organisation structure



Section 3: Segregation of duties and firewalls vis-à-vis UNDP representation on the project board/National Steering Committee:

1. As noted in the Minimum Fiduciary Standards for GEF Partner Agencies, in cases where a GEF Partner Agency (i.e. UNDP) carries out both implementation oversight and execution of a project, the GEF Partner Agency (i.e. UNDP) must separate its project implementation oversight and execution duties, and describe in the relevant project document a: 1) Satisfactory institutional arrangement for the separation of implementation oversight and executing functions in different departments of the GEF Partner Agency; and 2) Clear lines of responsibility, reporting and accountability within the GEF Partner Agency between the project implementation oversight and execution functions.

2. In this case, UNDP is only performing an implementation oversight role in the project vis-à-vis our role in the project board and in the project assurance function and therefore a full separation of project implementation oversight and execution duties has been assured.

Section 4: Roles and responsiblities of the project organisation structure:

a) **Project Board / National Project Steering Committee:** All UNDP projects must be governed by a multi-stakeholder board or committee established to review performance based on monitoring and evaluation, and implementation issues to ensure quality delivery of results. The Project Board (also called the Project Steering Committee) is the most senior, dedicated oversight body for a project.

The two main (mandatory) roles of the project board are as follows:

1) **High-level oversight of the execution of the project by the IP** (as explained in the "Provide Oversight" section of the POPP). This is the primary function of the project board and includes annual (and as-needed) assessments of any major risks to the project, and decisions/agreements on any management actions or remedial measures to address them effectively. The Project Board reviews evidence of project performance based on monitoring, evaluation, and reporting, including progress reports, evaluations, risk logs and the combined delivery report. The Project Board is responsible for taking corrective action as needed to ensure the project achieves the desired results.
2) **Approval of strategic project execution decisions of the IP** with a view to assess and manage risks, monitor and ensure the overall achievement of projected results and impacts and ensure long term sustainability of project execution decisions of the Implementing Partner(as explained in the "Manage Change" section of the POPP).

Requirements to serve on the National Project Steering Committee:

- ✓ Agree to the ToR of the Board and the rules on protocols, quorum, and minuting.
- ✓ Meet annually; at least once.
- ✓ Disclose any conflict of interest in performing the functions of a /National Project Steering Committee member and take all measures to avoid any real or perceived conflicts of interest. This disclosure must be documented and kept on record by UNDP.
- ✓ Ensure highest levels of transparency and ensure /National Project Steering Committee meeting minutes are recorded and shared with project stakeholders.

Responsibilities of the National Project Steering Committee:

- ✓ Consensus decision making:
  - The project board/National Project Steering Committee provides overall guidance and direction to the project, ensuring it remains within any specified constraints, and providing overall oversight of the project implementation.
  - Review project performance based on monitoring, evaluation and reporting, including progress reports, risk logs and the combined delivery report;
  - The project board is responsible for making management decisions by consensus.

- In order to ensure UNDP's ultimate accountability, project steering committee decisions should be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. UNDP will be entrusted with the responsibility of ensuring that the project is implemented according to UNDP rules and procedures, and in line with the GEF guidelines.

✓ Oversee project execution:
- Agree on PM's tolerances as required, within the parameters outlined in the project document, and provide direction and advice for exceptional situations when the PM's tolerances are exceeded.
- Appraise annual work plans prepared by the IP for the Project; review combined delivery reports prior to certification by the IP.
- Address any high-level project issues as raised by the PM and project assurance.
- Advise on major and minor amendments to the project the GoSE, UNDP and the donor and refer such proposed major and minor amendments to the UNDP BPPS Nature, Climate and Energy Executive Coordinator (and the GEF, as required by GEF policies);
- Provide high-level direction and recommendations to the PMU to ensure that the agreed deliverables are produced satisfactorily and according to plans.
- Track and monitor co-financed activities and realisation of co-financing amounts of this project.
- Approve the Inception Report, GEF annual project implementation reports, mid-term review and terminal evaluation reports.
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.

✓ Risk Management:
- Provide guidance on evolving or materialized project risks and agree on possible mitigation and management actions to address specific risks.
- Review and update the project risk register and associated management plans based on the information prepared by the IP. This includes risks related that can be directly managed by this project, as well as contextual risks that may affect project delivery or continued UNDP compliance and reputation but are outside of the control of the project. For example, social and environmental risks associated with co-financed activities or activities taking place in the project's area of influence that have implications for the project.
- Address project-level grievances.

✓ Coordination:
- Ensure coordination between various donor and government-funded projects and programmes.
- Ensure coordination with various government agencies and their participation in project activities.

Composition of the National Project Steering Committee: The composition of the Project Board must include individuals assigned to the following three roles:

1. **Project Executive:** This is the entity who represents ownership of the project and chairs the National Steering Committee. The Executive usually is the senior national counterpart for nationally implemented projects (typically from the same entity as the IP. The Project Executive is MoLWE.
2. **Beneficiary Representative(s):** Individuals or groups representing the interests of those groups of stakeholders who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. Often representatives from civil society, industry associations, or other government entities benefiting from the project can fulfil this role. There can be multiple beneficiary representatives in a Project Board. The Beneficiary Representatives are the Ministry of Local Government and the NUEW.
3. **Development Partners/Senior Suppliers** Individuals or groups representing the interests of the parties concerned that provide funding, strategic guidance and/or technical expertise to the project. The Development Partners/Senior Suppliers are MoFND, MoA, FWA and UNDP.
4. **Project Assurance:** Project assurance is the responsibility of the national Project Steering Committee; however, UNDP has a distinct assurance role for all UNDP projects in carrying out objective and independent project oversight and monitoring functions. UNDP performs quality assurance and supports the National Project Steering Committee (and PMU) by carrying out objective and independent project oversight and monitoring functions, including compliance with the risk

management and social and environmental standards of UNDP. The National Project Steering Committee cannot delegate any of its quality assurance responsibilities to the PM. Project assurance is totally independent of project execution.

A designated representative of UNDP playing the project assurance role is expected to attend as deemed necessary. It should be noted that while in certain cases UNDP's project assurance role across the project may encompass activities happening at several levels (e.g., global, regional), at least one UNDP representative playing that function must, as part of their duties, specifically attend board meeting and provide board members with the required documentation required to perform their duties. The UNDP representative will play the main project assurance function.

b) **Project Management – Execution of the Project:** The PM (also called project coordinator) is the senior most representative of the PMU and is responsible for the overall day-to-day management of the project and reports to the PIU, including the mobilization of all project inputs, supervision over project staff, responsible parties, consultants, and sub-contractors. The PM typically presents key deliverables and documents to the board for their review and approval, including progress reports, annual work plans, adjustments to tolerance levels and risk registers.
A designated representative of the PMU is expected to attend all board meetings and support board processes as a non-voting representative.
The primary PMU representative attending board meetings is the Project Manager.

The **PMU**, hosted by the *zoba* Debub administration, will coordinate a technical teams composed of field-level implementation coordinators from various relevant technical institutions.

- Project Manager (PM
- Accountant
- Cashier
- M&E Officer
- Planner
- Gender focal point
- SES focal point

The **Technical Implementation Team** will be composed of the following experts:

- Environment Specialist
- Land-use Specialist
- Water Resources Specialist
- Civil Engineer
- Animal Husbandry Specialist
- Agronomist
- Soil and Water Conservation and Irrigation Specialist
- Forestry and Wildlife Specialist
- Agricultural Researcher

VIII. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is US$36,550,000. This is financed through a LDCF grant of US$9,050,000 administered by UNDP, US$2,500,000 in cash co-financing to be administered by UNDP and additional support of US$25,000,000 in kind contribution by the GoSE. UNDP, as the GEF Implementing Agency, is responsible for the oversight of the GEF resources and the cash co-financing transferred to UNDP bank account only.

Co-financing: The actual realization of project co-financing amounts will be monitored by the UNDP Country Office and the PMU on an annual basis in the GEF Project Identification Form (PIF) and will be reported to the GEF during the mid-term review and terminal evaluation process as follows:

Table 10. Co-financing amounts

Co-financing source	Co-financing type	Name of Co-financier	Investment Mobilized	Co-financing amount
Government	In-kind	Ministry of Land, Water & Environment	recurrent expenditures	20,000,000
Government	Cash	Ministry of Land, Water & Environment	recurrent expenditures	5,000,000
GEF Agency	Cash	UNDP	investment	2,500,000
Total				36,550,00

Budget Revision and Tolerance: As per UNDP POPP, the project board may agree with the project manager on a tolerance level for each detailed plan under the overall multi-year workplan. The agreed tolerance should be written in the project document or approved project board meeting minutes. It should normally not exceed 10 percent of the agreed annual budget at the activity level, but within the overall approved multi-year workplan at the activity level. Within the agreed tolerances, the project manager can operate without intervention from the project board. Restrictions apply as follows:

Should the following deviations occur, the Project Manager/IP through UNDP Country Office will seek the approval of the BPPS/NCE-VF team to ensure accurate reporting to the GEF. It is **strongly encouraged** to maintain the expenditures within the approved budget at the budgetary account and at the component level:

a) Budget reallocations must prove that the suggested changes in the budget will not lead to material changes in the results to be achieved by the project. A strong justification is required and will be approved on an exceptional basis. Budget re-allocations among the components (including PMC) of the approved Total Budget and Work Plans (TBWP) that represent a value greater than 10% of the total GEF grant.
b) Introduction of new outputs/activities (i.e. budget items) that were not part of the agreed project document and TBWP that represent a value greater than 5% of the total GEF grant. The new budget items must be eligible as per the GEF and UNDP policies.
c) Project management cost (PMC): budget under PMC component is capped and cannot be increased.

UNDP is not in a position to increase the total budget above the amount approved by the donor; therefore any over-expenditure would have to be absorbed from non-GEF resources by the Implementing Partner (GEF Executing Entity)

Project extensions: The UNDP-BPPS-NCE team Executive Coordinator must approve all requests for extension of the Project Completion Date and for other milestone extensions with hard deadlines. All extensions impose additional time and cost burdens at all levels and the GEF project budget cannot be increased beyond its originally approved amount. A single extension may be granted on an exceptional basis and subject to the conditions and maximum durations set out in the UNDP POPP. The project management costs during the extension period must remain within

the originally approved amount, and any increase in PMC costs shall be covered by non-GEF resources; the additional UNDP oversight costs during the extension period must be covered by non-GEF resources, in accordance with UNDP's policy as set out in UNDP POPP.

For any extension request, UNDP CO and IP will consult and jointly present a clear plan indicating how and from which specific sources the additional oversight costs that will be incurred by UNDP will be covered during the extended period. The BPPS-NCE Executive Coordinator will consult the Regional Bureaux (RBX) and may reject the extension request if no (external co-financing by the IP or internal UNDP CO resources) can be identified.

All extension requests, along with all supporting documentation, shall be submitted by the IP to the UNDP CO in line with the requirements and within the deadlines set out in the UNDP SOPs and policies in UNDP POPP.

Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies. Audit cycle and process must be discussed during the Inception workshop. If the Implementing Partner is an UN Agency, the project will be audited according to that Agencies applicable audit policies.

Transfer or disposal of assets: In consultation with the Implementing Partner and other parties of the project, UNDP is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project, however **must be done before the operational closure date**. In all cases of transfer, a transfer document must be prepared and kept on file[22]. The transfer should be done before Project Management Unit complete their assignments.

Completion Date: The project completion date is the date of Project Document Signature plus project duration. This date can only be extended through a formal extension request. Prior to completion date, all UNDP-financed inputs must be provided and related activities for the Project completed. No activities, except for the final clearance of the Terminal Evaluation Report and the corresponding management response and the end-of-project review Project Board Meeting should take place after the Completion Date.

Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. All costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.

- **Operational Closure**: **Operational closure must happen within 9 months from project completion date.** Prior to operational closure, the Terminal Evaluation must have been submitted and the corresponding TE management response and the end-of-project review Project Board meeting must have been completed. The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. Before Operational Closure, the project must have completed the transfer or disposal of any equipment that is still the property of UNDP.

- **Financial Closure: Financial closure must happen within 6 months of operational closure or after the date of cancellation.** The project will be financially closed when the following conditions have been met: a) the project is operationally completed or has been cancelled; b) the Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).
  Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed

[22] See https://popp.undp.org/ https://popp-prod.acquia.undp.org/policy-page/close-and-transition.

closure documents including confirmation of final cumulative expenditure and unspent balance to BPPS/NCE for confirmation before the project will be financially closed in Quantum by the UNDP Country Office.

Cancellation and Suspension: All projects considering going through cancellation or suspension must follow UNDP and GEF requirements. Guidance can be found in the UNDP POPP (SOPs for management actions of Vertical Fund projects escalated to the Executive Coordinator and Guidance for GEF project revisions).

Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the BPPS/NCE team Directorate in New York. No action is required by the UNDP Country Office on the actual refund from UNDP project to the GEF. Unspent project balance is not permitted to be transferred to any other projects.

IX. TOTAL BUDGET AND WORK PLAN

Quantum Business Unit	UNDP-ERI10		
Quantum Project ID:	00103252	**Quantum Project Title:**	Mainstreaming climate risk considerations in food security and IWRM in Tsilima Plain and upper catchment area
Quantum Award ID:	00103252.1	**Quantum Award Title:**	Mainstreaming climate risk considerations in food security and IWRM in Tsilima Plain and upper catchment area
UNDP-GEF PIMS No.	4633		
Implementing Partner	*Ministry of Land, Water and Environment (MoLWE)*		

Quantum Outcome (LDCF Component)	Quantum Output (LDCF Component)	Quantum Activity (LDCF Component)	Quantum Responsible Party (UNDP, IP, or Responsible Party)	Quantum Fund ID	Quantum Donor ID	Quantum Budgetary Account Code	Quantum Budget Account Description	2,024	2,025	2,026	2,027	2,028	Total (USD)	Budget Note
Component 1: Information about the impacts of ecosystem degradation in aggravating vulnerability to climate change risks and reducing the resilience of development gains understood and integrated into key decision-making processes.	*Outcome 1.1 Capacity of research institutions to undertake climate-related research increased*	*Output 1.1 Capacity of research institutions to undertake climate-related research increased*	*MoLWE*	*62160*	*10003*	*71200*	*International Consultant*	10,336	-	-	-	-	10,336	1
			MoLWE	*62160*	*10003*	*71300*	*Local Consultant*	81,505	48,000	16,000	16,000	16,000	177,505	2
			MoLWE	*62160*	*10003*	*71600*	*Travel*	18,275	4,700	4,700	4,700	4,700	37,075	3
			MoLWE	*62160*	*10003*	*72100*	*Contractual Services-Companies*	18,200	171,000	167,500	177,500	177,500	711,700	4
			MoLWE	*62160*	*10003*	*72200*	*Equipment and Furniture*	65,914	73,983	-	-	-	139,897	5
			MoLWE	*62160*	*10003*	*72400*	*Communic & Audio Visual Equip*	28,700	34,700	34,700	34,700	34,700	167,500	6
			MoLWE	*62160*	*10003*	*72500*	*Supplies*	32,300	6,500	6,500	6,500	6,500	58,300	7
			MoLWE	*62160*	*10003*	*74200*	*Audio Visual&Print Prod Costs*	13,000	30,500	15,500	15,500	15,500	90,000	8
			MoLWE	*62160*	*10003*	*75700*	*Training, Workshops and Confer*	25,250	15,500	34,500	-	-	75,250	9
							Sub-Total LDCF	**293,480**	**384,883**	**279,400**	**254,900**	**254,900**	**1,467,563**	
			MoLWE	*04000*	*00012*	*74200*	*Audio Visual&Print Prod Costs*	-	4,000	4,000	4,000	4,000	16,000	10
							Sub-Total UNDP	**-**	**4,000**	**4,000**	**4,000**	**4,000**	**16,000**	
							TOTAL OUTCOME 1.1	***293,480***	***388,883***	***283,400***	***258,900***	***258,900***	***1,483,563***	
	Outcome 1.2 Capacity of extension service institutions to provide knowledge-based climate-smart extension services to arable agriculture,	*Output 1.2 Capacity of extension service institutions to provide knowledge-based climate-smart extension services to arable agriculture,*	*MoLWE*	*62160*	*10003*	*73100*	*Rental & Maintenance-Premises*	5,000	5,000	5,000	5,000	5,000	25,000	11
			MoLWE	*62160*	*10003*	*75700*	*Training, Workshops and Confer*	64,873	232,075				296,948	12
							Sub-Total LDCF	***69,873***	***237,075***	***5,000***	***5,000***	***5,000***	***321,948***	
			MoLWE	*04000*	*00012*	*72500*	*Supplies*	-	5,425	5,425	5,425	5,425	21,700	13
							Sub-Total UNDP	**-**	***5,425***	***5,425***	***5,425***	***5,425***	***21,700***	

Quantum Outcome (LDCF Component)	Quantum Output (LDCF Component)	Quantum Activity (LDCF Component)	Quantum Responsible Party (UNDP, IP, or Responsible Party)	Quantum Fund ID	Quantum Donor ID	Quantum Budgetary Account Code	Quantum Budget Account Description	2,024	2,025	2,026	2,027	2,028	Total (USD)	Budget Note
	livestock production and water management increased	*livestock production and water management increased*												
							TOTAL OUTCOME 1.2	**69,873**	**242,500**	**10,425**	**10,425**	**10,425**	**343,648**	
							Sub-total LDCF Component 1	**363,353**	**621,958**	**284,400**	**259,900**	**259,900**	**1,789,511**	
							Sub-total UNDP Component 1	**-**	**9,425**	**9,425**	**9,425**	**9,425**	**37,700**	
							TOTAL COMPONENT 1	**363,353**	**631,383**	**293,825**	**269,325**	**269,325**	**1,827,211**	
Component 2: Climate-resilient land-use planning to support the adoption of agricultural and ecological interventions.	*Outcome 2.1 Climate-resilient land use planning implemented over 9,000 hectares of the Tsilima Region*	*Output 2.1 Climate-resilient land use planning implemented over 9,000 hectares of the Tsilima Region*	*MoLWE*	*62160*	*10003*	*71200*	*International Consultant*	35,902	30,000	-	-	-	65,902	14
			MoLWE	*62160*	*10003*	*71300*	*Local consultant*	16,546	12,500	-	-	-	29,046	15
			MoLWE	*62160*	*10003*	*71600*	*Trave*	28,066	18,632	18,632	18,632	18,632	102,594	16
							Sub-Total LDCF	**80,514**	**61,132**	**18,632**	**18,632**	**18,632**	**197,542**	
			MoLWE	*04000*	*00012*	*71300*	*Local consultant*	-	4,000	-	-	-	4,000	17
			MoLWE	*04000*	*00012*	*72100*	*Contractual Services-Companies*	-	86,520	28,840	28,840		144,200	18
							Sub-Total UNDP	**-**	***90,520***	***28,840***	***28,840***	**-**	***148,200***	
							TOTAL OUTCOME 2.1	**80,514**	**151,652**	**47,472**	**47,472**	**18,632**	**345,742**	
	Outcome 2.2 Integrated water management operationalised across the Tsilima Region, increasing water availability and land under irrigation.	*Output 2.2 Integrated water management operationalised across the Tsilima Region, increasing water availability and land under irrigation.*	*MoLWE*	*62160*	*10003*	*71300*	*Local consultant*	-	5,000	-	-	-	5,000	19
			MoLWE	*62160*	*10003*	*72100*	*Contractual Services-Companies*	518,000	1,329,800	1,091,800	1,095,800	1,080,100	5,115,500	20
			MoLWE	*62160*	*10003*	*72200*	*Equipment and Furniture*	-	129,650	-	-	-	129,650	21
			MoLWE	*62160*	*10003*	*72300*	*Materials & Goods*	-	55,000	53,000	-	-	108,000	22
			MoLWE	*62160*	*10003*	*72400*	*Communic & Audio Visual Equip*	11,950	11,950	-	-	-	23,900	23
			MoLWE	*62160*	*10003*	*72500*	*Supplies*	500	500	500	500	500	2,500	24
			MoLWE	*62160*	*10003*	*74200*	*Audio Visual&Print Prod Costs*	9,000	10,000	3,000	3,000	3,000	28,000	25
			MoLWE	*62160*	*10003*	*75700*	*Training, Workshops and Confer*	32,540	56,850	21,000	21,000	31,000	162,390	26
							Sub-Total LDCF	**571,990**	**1,598,750**	**1,169,300**	**1,120,300**	**1,114,600**	**5,574,940**	
			MoLWE	*62160*	*10003*	*72100*	*Contractual Services-Companies*		170,200	170,200	170,200	170,200	680,800	27
			MoLWE	*04000*	*00012*	*72200*	*Equipment and Furniture*	-	45,000	-	-	-	45,000	28
			MoLWE	*04000*	*00012*	*72300*	*Materials & Goods*	-	708,270	361,060	238,200	-	1,307,530	29
							Sub-Total UNDP	**-**	***923,470***	***531,260***	***408,400***	***170,200***	***#######	
							TOTAL OUTCOME 2.2	**571,990**	**2,522,220**	**1,700,560**	**1,528,700**	**1,284,800**	**7,608,270**	
			MoLWE	*62160*	*10003*	*72300*	*Materials & Goods*	60,080	223,830	223,830	223,830	223,830	955,400	30

Quantum Outcome (LDCF Component)	Quantum Output (LDCF Component)	Quantum Activity (LDCF Component)	Quantum Responsible Party (UNDP, IP, or Responsible Party)	Quantum Fund ID	Quantum Donor ID	Quantum Budgetary Account Code	Quantum Budget Account Description	2,024	2,025	2,026	2,027	2,028	Total (USD)	Budget Note
	Outcome 2.3 Increased food production through the implementation of climate-smart agricultural practices across the Tsilima Region.	*Output 2.3 Increased food production through the implementation of climate-smart agricultural practices across the Tsilima Region.*					***Sub-Total LDCF***	***60,080***	***223,830***	***223,830***	***223,830***	***223,830***	***955,400***	
							TOTAL OUTCOME 2.3	**60,080**	**223,830**	**223,830**	**223,830**	**223,830**	**955,400**	
							Sub-Total LDCF Component 2	**712,584**	**1,883,712**	**1,411,762**	**1,362,762**	**1,357,062**	**6,727,882**	
							Sub-Total UNDP Component 2	**-**	**1,013,990**	**560,100**	**437,240**	**170,200**	**2,181,530**	
							TOTAL COMPONENT 2	**712,584**	**2,897,702**	**1,971,862**	**1,800,002**	**1,527,262**	**8,909,412**	
Component 3: Knowledge management and awareness-raising	*Outcome 3 Increased monitoring, knowledge-sharing and awareness at Zoba, sub-Zoba, Kebabi and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) climate-smart agricultural technologies and measures; and iv) the sustainable use and management of natural resources.*	*Output 3.1 Increased monitoring, knowledge-sharing and awareness at Zoba, sub-Zoba, Kebabi and community levels on: i) climate change risks; ii) climate- and ecosystem-smart watershed restoration; iii) climate-smart agricultural technologies and measures; and iv) the sustainable use and management of natural resources.*	*MoLWE*	*62160*	*10003*	*71200*	*International Consultant*	5,566	-	-	-	-	5,566	31
			MoLWE	*62160*	*10003*	*71300*	*Local Consultant*	54,041	40,000	10,000	-	-	104,041	32
			MoLWE	*62160*	*10003*	*74200*	*Audio Visual&Print Prod Costs*	-	2,500	2,500	2,500	2,500	10,000	33
			MoLWE	*62160*	*10003*	*75700*	*Training, Workshops and Confer*	9,500	22,000	9,500	17,000	19,500	77,500	34
							Sub-Total LDCF	**69,107**	**64,500**	**22,000**	**19,500**	**22,000**	**197,107**	
			MoLWE	*04000*	*00012*	*75700*	*Training, Workshops and Confer*	12,000	12,000	12,000	12,000	12,000	60,000	35
			MoLWE	*04000*	*00012*	*72500*	*Supplies*	-	2,500	2,500	2,500	2,500	10,000	36
							Sub-Total UNDP	**12,000**	**14,500**	**14,500**	**14,500**	**14,500**	**70,000**	
							TOTAL OUTCOME 3.1	**81,107**	**79,000**	**36,500**	**34,000**	**36,500**	**267,107**	
							TOTAL COMPONENT 3	**81,107**	**79,000**	**36,500**	**34,000**	**36,500**	**267,107**	
Component on Monitoring	*M & E*	*M & E*	*UNDP*	*62160*	*10003*	*71200*	*International Consultant*	-	-	30,000	-	35,000	65,000	37

Quantum Outcome (LDCF Component)	Quantum Output (LDCF Component)	Quantum Activity (LDCF Component)	Quantum Responsible Party (UNDP, IP, or Responsible Party)	Quantum Fund ID	Quantum Donor ID	Quantum Budgetary Account Code	Quantum Budget Account Description	2,024	2,025	2,026	2,027	2,028	Total (USD)	Budget Note
and Evaluation (M&E)			*UNDP*	*62160*	*10003*	*71300*	*Local Consultant*	-	-	15,000	-	20,000	35,000	38
							Sub-Total LDCF	**-**	**-**	**45,000**	**-**	**55,000**	**100,000**	
			MoLWE	*62160*	*10003*	*71300*	*Local Consultant*	5,000	13,500	16,500	16,500	21,500	73,000	39
			MoLWE	*62160*	*10003*	*71600*	*Travel*	2,000	2,000	7,000	2,000	7,000	20,000	40
			MoLWE	*62160*	*10003*	*75700*	*Training, Workshops and Confer*	19,500	19,500	19,500	19,500	19,500	97,500	41
							Sub-Total LDCF	***26,500***	***35,000***	***43,000***	***38,000***	***48,000***	***190,500***	
			MoLWE	*04000*	*00012*	*71600*	*Travel*	-	5,000	5,000	5,000	5,000	20,000	42
							Sub-Total UNDP	**-**	***5,000***	***5,000***	***5,000***	***5,000***	***20,000***	
							Subt-Total LDCF M & E	26,500	35,000	88,000	38,000	103,000	290,500	
							Sub-total UNDP M &E	**-**	***5,000***	***5,000***	***5,000***	***5,000***	***20,000***	
							TOTAL M&E	**26,500**	**40,000**	**93,000**	**43,000**	**108,000**	**310,500**	
Project Management Cost (PMC)	*PMC*	*PMC*	*MoLWE*	*62160*	*10003*	*72800*	*Information Technology Equipmt*	30,000	-	-	-	-	30,000	43
							Sub-Total LDCF	***30,000***	**-**	**-**	**-**	**-**	***30,000***	
			UNDP	*62160*	*10003*	*74100*	*Professional Services*	3,000	3,000	3,000	3,000	3,000	15,000	44
							Sub-Total LDCF	***3,000***	***3,000***	***3,000***	***3,000***	***3,000***	***15,000***	
			MoLWE	*04000*	*00012*	*71300*	*Local Consultant*	-	28,245	28,175	28,175	28,175	112,770	45
			MoLWE	*04000*	*00012*	*72400*	*Communic & Audio Visual Equip*	-	7,200	3,600	3,600	3,600	18,000	46
			MoLWE	*04000*	*00012*	*72500*	*Supplies*	2,000	2,000	2,000	2,000	2,000	10,000	47
			MoLWE	*04000*	*00012*	*74500*	*Miscellaneous*	1,000	1,000	1,000	1,000	1,000	5,000	48
			MoLWE	*04000*	*00012*	*75700*	*Training, Workshops and Confer*	-	11,250	11,250	11,250	11,250	45,000	49
							Sub-Total UNDP	***3,000***	***49,695***	***46,025***	***46,025***	***46,025***	***190,770***	
							Sub-Total LDCF PMC	***33,000***	***3,000***	***3,000***	***3,000***	***3,000***	***45,000***	
							Sub-Total UNDP PMC	***3,000***	***49,695***	***46,025***	***46,025***	***46,025***	***190,770***	
							TOTAL PROJECT MANAGEMENT COST	**36,000**	**52,695**	**49,025**	**49,025**	**49,025**	**235,770**	
							TOTAL LDCF	**1,204,544**	**2,608,170**	**1,809,162**	**1,683,162**	**1,744,962**	**9,050,000**	
							TOTAL UNDP	**15,000**	**1,092,610**	**635,050**	**512,190**	**245,150**	**2,500,000**	
							Grand TOTAL	**1,219,544**	**3,700,780**	**2,444,212**	**2,195,352**	**1,990,112**	**11,550,000**	

Budget Note

S/N	Project output (description)
1	This budget is reserved to cover the cost to hire an international consultant to conduct a strategic risk analysis and social and environmental screening of project interventions under Component 1, including: i) the collation, synthesis and monitoring of project-related traditional knowledge on CSA practices for a central database (Outputs 1.1.2, 1.1.4 & 1.2.3); and ii) update of the agricultural extension services package (Output 1.2.2). The consultant will be hired for 40 days in the first year of project implementation, with the budget for the first 13 days (32.5% of total cost) covered under this component and the remaining balance covered under the other two components (see budget note **14** & **31**). The budget covers a daily fee @ US$700, a flight ticket @ US$2,000, terminal and visa fees @ US$258. The budget also covers the costs of an in-country mission for ten days, including a daily subsistence allowance for 2 days in Asmara @ US$153 per day and for 10 days elsewhere @ US$124 per day ***The total estimated cost is US$10,336***
2	This budget is reserved to cover the cost of: · one national consultant: i) to conduct a comprehensive capacity needs assessment for research on climate-related issues (Activity 1.1.1.1) and to develop a capacity development programme for NARI and similar institutions based on the results of the assessment (Activity 1.1.1.2); ii) to conduct a capacity needs assessment of the AED and to review and update the extension packages to include climate-risk considerations (Activity 1.2.2.1) in close consultation with the Technical Advisor/Climate Change Specialist. · one national consultant: i) to compile baseline information to inform the development of land-use and area development plans (Outputs 1.1.4 & 1.2.3), including a VRA (Output 2.1.1); and ii) to support the establishment of CBOs to facilitate cross-community dialogues on resource management (Output 1.1.2). *The estimated cost for these two experts is US$69,250 for approximately 277 days in the first two years of implementation.* This budget is also reserved to cover the cost of: · two national consultants to conduct a strategic risk analysis and social and environmental screening of project interventions under Component 1, including: i) the collation, synthesis and monitoring of project-related traditional knowledge on CSA practices for a central database (Outputs 1.1.2, 1.1.4 & 1.2.3); and ii) update of the agricultural extension services package (Output 1.2.2). The consultant will be hired for 40 days in the first year of project implementation, with the budget for the first 13 days (32.5% of total cost) covered under this component and the remaining balance covered under the other tw+B23o components (see budget note **15** & **32**). The budget covers a daily fee @ US$250 and the costs of an in-country mission for ten days with a daily subsistence allowance for 10 days @ US$124 per d+B68ay *The estimated cost for these two experts is US$7,505* This budget is reserved to cover the cost of fees to work with the team (technically supported and supervised by the Technical Advisor/Climate Change Specialist) to coordinate the development of an EWS in sub-*zoba* Dbarwa (Output 1.1.4). The EWS Specialist will also contribute to synthesising community observations, traditional knowledge and scientific information and to updating the existing livelihood maps for sub-*zoba* Dbarwa (Output 1.1.4).

S/N	Project output (description)
	The estimated cost for this expert is US$20,750 for approximately 65 days. This budget will also contribute US$80,000 towards covering the cost of hiring a technical advisor on climate change (see budget note **41**). ***The total estimated cost is US$177,505***
3	This budget is reserved to cover the costs of travel expenses in this component. ***The total estimated cost is US$16,000.***
4	This budget is reserved to cover the cost of contracting : (i) a coordinating company to support the AED and NARI to roll out the revised extension packages — focussing on CSA and livestock production practices — at five pilot areas in the sub-*zoba* Dbarwa to assess the level of uptake and implementation among farmers and other land users. The estimated for this expert is US$34,700. (ii) an M&E expert to work closely with the PMU to develop and M&E methodology for assessing and monitoring the adaptation interventions and documenting processes and synthesising lessons. The estimated cost for this expert is US$15,000. (iii) cover the fees to NARI for undertaking research at, *inter alia*, demonstration sites, farmer's fields, enclosures and catchment dams under Output 1.1.3. The focus of the research will be: i) multidisciplinary research to determine the water balance and water requirement of crops; ii) development of drought-resistant and short-maturing crops for rainfed agriculture; iii) development of disease- and pest-resistant field and horticultural crops; iv) conservation agriculture practices, including tillage management and soil fertility; v) watershed restoration; vi) agroforestry and silvo-pasture; vii) livestock production, rangeland development and grazing management; viii) post-harvest handling, storage and processing techniques; and ix) non-timber forest products.. The budget will also include the publication of research findings. *Estimated cost is US$662,000.* ***The total estimated cost is US$711,700***
5	This budget is reserved to cover the cost of purchasing: • 7 motorcycles @ US$5,000 each for use by extension agents in each of the project villages. *The estimated sub-cost is US$35,000.* • 27 bicycles @US$700 each for use by extension agents in each of the project villages. *The estimated sub-cost is US$18,900.* • Office equipment (e.g., printers, computers) and furniture. *The estimated sub-cost is US$85,997* ***The total estimated cost is US$139,897***
6	This budget is reserved to cover the cost of fast internet connection at an estimated cost of US$18,700 the first year of implementation following by US$ 10,000 per year for the project office and the purchase of mobile phones for extension agents. This budget is also reserved for the provision of financial support for the establishment of linkages between NARI and international institutions and research institutes through subscription to electronic bulletins, research journals and scientific magazines focused on climate change and for the establishment of collaborative research programmes. ***The total estimated cost is US$ 167,500***
7	This budget is reserved to cover the cost if purchasing office supplies and stationery for the project office and for some KAA and extension stations.

S/N	Project output (description)
	The total estimated cost is US$58,300.
8	The budget is reserved to cover the cost of printing and publication. As part of the development of land-use plans, the project will support the mapping of natural resource use and livelihoods (Output 1.1.4) and have these printed. As part of the communication and awareness-raising activities under Outcome 1.2, manuals, pamphlets, leaflets and training materials for extension agents and farmers will be produced. ***The total estimated cost is US$90,000.***
9	This budget is reserved to cover the cost of conducting training and training workshops as follows: · National and regional (sub-national) level conferences/workshops to facilitate CCA and CSA knowledge and information-sharing baseline and facilitate establishment of a cross-sectoral committee/forum to facilitate mainstreaming of CCA into policies, strategies and practices of the different sectors/government institutions. Three national level conferences at US$3000 each, three regional level conferences at US$2000 each and three meetings at sub-*zoba* level at US$1500 each. *The estimated sub-cost is US$19,500.* · Provision of training for national researchers based at NARI on CSA. Short term training (three months) for ten researchers @ US$3,450 each. *The estimated sub-cost is US$34,500.* · Hold workshops between relevant sectors/institutions on the strengthening of MoA's ASIS. *The estimated sub-cost is US$15,250.* · Training on meteorological observation and data analysis for technical staff of the MSU and the AMU. Three sessions at U$2,000 each. *The estimated sub-cost is US$6,000.* ***The total estimated cost is US$75,250***
10	This budget is allocated to NARI for the publication of research findings (see budget note 4) at US$4,000 per year starting from year 2. ***The total estimated cost is US$16,000.***
11	This budget is reserved to cover the cost of office rental for extension agents in five villages at US$1,000 for 5 offices per year. ***The total estimated cost is US$25,000.***
12	This budget is reserved to cover the cost of conducting training and training workshops as follows: · Training for community members on data collection to build capacity for community monitoring of the impacts of project interventions. Train 102 people from 67 villages at US$150 per person. *The estimated sub-cost is US$15,300.* · Training for community members on tracking key variables for EWS. Train 460 people at US$100 each. *The estimated sub-cost is US$46,000.* · Regional-level consultative training and awareness workshop. Train 300 persons at US$50 per day. *The estimated sub-cost is US$15,000.* · Two national-level workshops to review and validate draft revised and updated extension packages at US$6,150 per workshop. *The estimated sub-cost is US$12,300.* · Regional- and sub-regional-level workshops on revised extension services to be held for 80 persons at US$50 each, plus venue hire and supplies. *The estimated sub-cost is US$4,800.* · Training of subject matter specialists from *zoba* and sub-*zoba* MoA on various aspects of climate change and mainstreaming into sectoral practices. Training will be undertaken at US$15,000 annually. *The estimated sub-cost is US$75,000.* · Training of frontline extension agents for five days a year to apprise them on climate-smart approaches at US$150 per person per day, plus venue hire and supplies. *The estimated sub-cost is US$83,748.* · Training of KAA and community members on mainstreaming climate risk into *kebabi*- and community-level implementation of climate-smart land-use and agricultural practices for 448 persons at US$100 each. *The estimated sub-cost is US$44,800.*

S/N	Project output (description)
	The total estimated cost is US$296,948
13	This budget is reserved for office supplies for 23 KAA and extension stations @ US$5,300 per year. ***The total estimated cost is US$21,700.***
14	The budget is reserved for: To cover the cost to hire an international consultant to conduct a strategic risk analysis and social and environmental screening of project interventions under Component 2, including: i) the development of regional land-use and area development plans and a national drought and flood management plan (Output 2.1.1); ii) the revision of community by-laws for sustainable land, forest and water management (Output 2.1.2); iii) the classification of land uses and quality to inform the government's land redistribution under the land proclamation (Output 2.1.3); iv) the development of comprehensive water-use and development plans — in particular with regards to sustainable use of groundwater — and review of the 2009 IWRM Action Plan (Output 2.2.1); v) the development of water storage and capture infrastructure (Output 2.2.3); vi) the implementation of seasonal enclosures (Output 2.2.3); vii) the planting of multi-purpose, non-native trees (Output 2.2.3); viii) the implementation of CSA practices (Output 2.3.1); and ix) the introduction of alternative income-generating activities (Output 2.3.2). The consultant will be hired for 40 days in the first year of project implementation, with the budget for 20 days (50% of total cost) covered under this component and the remaining balance covered under the other two components (see budget note **1** & **31**). The budget covers a daily fee @ US$700, a flight ticket @ US$2,000, terminal and visa fees @ US$258. The budget also covers the costs of an in-country mission for ten days, including a daily subsistence allowance for 2 days in Asmara @ US$153 per day and for 10 days elsewhere @ US$124 per day. sub-total B156$15,902 Covering the cost of hiring service providers to develop Livelihoods Action Plan @ cost of $20,000 Covering cost of service providers for conducting 2 Limited-scope Environmental and Social Impact Assessments of sub-surface dams (2 ESIAs at $15,000), making total of $30,000 ***The total estimated cost is US$ 65,902***
15	This budget is reserved to cover the cost of hiring: · a Water Resources Specialist to support the development of the national drought and flood management action plans (Output 2.1.1). *The estimated cost for this expert is US$250 per day for 30 days in the second year of implementation - total $7,500* · two national consultants to conduct a strategic risk analysis and social and environmental screening of project interventions under Component 2, including: i) the development of regional land-use and area development plans and a national drought and flood management plan (Output 2.1.1); ii) the revision of community by-laws for sustainable land, forest and water management (Output 2.1.2); iii) the classification of land uses and quality to inform the government's land redistribution under the land proclamation (Output 2.1.3); iv) the development of comprehensive water-use and development plans — in particular with regards to sustainable use of groundwater — and review of the 2009 IWRM Action Plan (Output 2.2.1); v) the development of water storage and capture infrastructure (Output 2.2.3); vi) the implementation of seasonal enclosures (Output 2.2.3); vii) the planting of multi-purpose, non-native trees (Output 2.2.3); viii) the implementation of CSA practices (Output 2.3.1); and ix) the introduction of alternative income-generating activities (Output 2.3.2). The consultant will be hired for 40 days in the first year of project implementation, with the budget for 20 days (50% of total cost) covered under this component and the remaining balance covered under the other two components (see budget note **2** & **32**). The budget covers a daily fee @ US$250 and the costs of an in-country mission for ten days with a daily subsistence allowance for 10 days @ US$124 per day. sub-total $11,546
	This budget is reserved to cover the cost of hiring National consultants to facilitate the:

S/N	Project output (description)
	· ESMF process for Project - $2,500 · Assessment and management of Environmental, Social, Health and Safety (ESHS) risks and impacts of agriculture and agroforestry, livestock raising, water harvesting and storage infrastructure, and watershed restoration - $2,500 · Assessment and management of livelihood risks and impacts of economic displacement due to loss or restriction of access to natural resources - $2,500 · Stakeholder consultation and participation in projects involving agriculture and agroforestry, livestock, and water harvesting and storage - $2,500 ***The total estimated cost is US$29,046***
16	This budget is reserved for local travel in the form of vehicle hire by consultants and officers to project intervention sites to conduct field activities for the duration of the project. The estimated sub-cost is US$28,066 for the first year and US$13,632 for each of the remaining years. Site visits for social and environmental screening of proposed interventions; field oversight of implementation of ESMPs, HSMPs, IP/VMPs and PMPs; and monitoring of LAP implementation budgeted at 5,000/year * 4 years = $20,000) ***The total estimated cost is US$ 102,594***
17	This budget is reserved to cover the cost of contracting a consultant to assist communities in the development of the land-use and area development plans with the help of the results of the comprehensive VRA. ***The total estimated cost is US$4,000.***
18	This budget is reserved to cover the cost of contracting service providers or companies to: · undertake land capability classifications, community consultations, reviewing and strengthening community bylaws and development of land use and area development plans; and · undertake groundwater and surface water resources assessment. ***The total estimated cost is US$144,200***
19	This budget is reserved to cover the cost of hiring: · a Water Resources Specialist to undertake a review of the 1009 IWRM Action Plan to incorporate responses to climate change impacts in the water sector (Output 2.2.1). This will include undertaking consultations, situational analysis and providing recommendations for the revision of the Plan. Technical support for this task will be provided by the Technical Advisor/Climate Change Specialist. *The estimated cost for this expert is US$250 per day for 20 days in the second year of implementation.* ***The total estimated cost is US$ 5,000***
20	This budget is reserved to cover the cost of contracting service providers or companies to support the Departments of Land and Water and the PMU to: · undertake soil surveys at US$100 per day for 60 days in the first year of implementation. These soil surveys will inform land capability classifications. *The estimated sub-cost is US$6,000.* · produce a land capability classification map. *The estimated sub-cost is US$11,000.* · undertake an audit of the state of land, water and other natural resources at US$100 per day for 60 days. *The estimated sub-cost is US$6,000.* · facilitate community consultations to inform the development of land-use plans. *The estimated sub-cost is US$17,525.*

S/N	Project output (description)
	· facilitate inter-community dialogues to establish CBOs and a platform or forum for discussions between CBOs. *The estimated sub-cost is US$16,750.* · conduct GIS mapping for the demarcation of land uses, as well as training and dissemination of information to extension agents and subject matter specialists to facilitate climate resilient land-use planning. *The estimated sub-cost is US$11,000.* · Facilitate community-led water development plans, including: i) 23 *kebabi*-level consultations and facilitation to develop water development plans as part of broader land-use and area development plans at US$100 each; and ii) 20 inter-village meetings and consultations for negotiation and dialogue annually throughout the duration of the project at US$200 each. *The estimated sub-cost is US$22,300.* · undertake installation and routine operation and maintenance of the groundwater monitoring stations and documentation. *The estimated sub-cost is US$107,525.* · develop water management tools and guidelines for dissemination. *The estimated sub-cost is US$10,000.* · undertake geological and hydrogeological assessments. *The estimated sub-cost is US$20,500.* · construct groundwater recharge facilities as per the study and detailed design. *The estimated sub-cost is US$345,400.* · facilitate the establishment of effective community water management bodies (i.e., WUAs). *The estimated sub-cost is US$2,900.* · provide maintenance of 200 ha of existing permanent enclosures at an estimated of US$1,000 per ha. *The estimated sub-cost is US$200,000.* · identify and implement a range of CSA technologies and methods in and around pilot sites, including: i) conservation agriculture (10 ha at US$10,000 per ha); ii) livestock production (US$100,000 total); iii) climate-smart irrigation program (10 ha at US$20,000 per ha); and iv) agroforestry (60 ha at US$500 per ha). *The estimated sub-cost is US$430,000.* · install groundwater monitoring wells (8 at US$3,000 each), including drilling (200 m at US$670 per m*). The estimated sub-cost is US$158,000.* · build soil and water conservation schemes, including: check dams (1,000 ha at US$100 per ha); hillside terracing (1,200 ha at US$1,520 per ha); pitting (1,200 ha at US$265 per ha); seedlings (1,200 ha at US$533 per ha); planting (1,200 ha at US$80 per ha). *The estimated sub-cost is US$2,977,600.* · coordinate enrichment planting on 300 ha at an estimated cost of US$1,750 per ha. *The estimated sub-cost is US$525,000.* · establish aquaculture through the introduction of freshwater fish in existing micro dams, including training and capacity building activities for the two teams. *The estimated sub-cost is US$50,000.* · conduct soil and water conservation activities with labour inputs from communities over 9,600 days at US$15 per day. *The estimated sub-cost is US$144,000.* · provide technical support to strengthen the WRD's water resources information database and management systems. *The estimated sub-cost is US$54,000.* ***The total estimated cost is US$5,115,500***
21	This budget is reserved to cover the cost of the purchasing and installation of equipment. · Staff gauges (100 at US$50 each), including infrastructure to fix gauges (30 m^3 at US$200 each). *The estimated sub-cost is US$11,000.* · Automatic stream gauging station, with 3 staff gauges. *The estimated sub-cost is US$41,650.* · Three Class 3 meteorological stations @ US$8,000 each. *The estimated sub-cost is US$24,000.* · Refurbishment of one Class 4 meteorological station to Class 1 @ US$20,000, one Class 2 station to Class 1 @US$5,000, one Class 4 station to Class 2 @ US$10,000 and three Class 4 stations to Class 3 @ US$6,000 each. *The estimated sub-cost is US$53,000.*

S/N	Project output (description)
	The total estimated cost is US$129,650.
22	This budget is reserved to cover the cost of the purchasing and installation of materials and goods. · Construction materials, including cement, rock, sand, tools and equipment for the construction of 6 diversion schemes. *The estimated sub-cost is US$108,000* ***The total estimated cost is US$ 108,000***
23	This budget is reserved to cover the cost of print materials as follows: · Procuring recent and high-resolution satellite imagery for the land capability classification, soil survey and map production. The estimated cost is US$50 per km^2 and the project area is ~478 km^2. The imagery will be used in the mapping of drought- and flood-prone areas as well as community-based land-use and area development plans. ***The total estimated sub-cost is US$23,900***
24	This budget is reserved to cover the cost of office supplies to WRD and the Water Unit offices at *zoba* Debub (US$500 annually) to facilitate support for implementation of water sector-related interventions. ***The total estimated cost is US$2,500.***
25	This budget is reserved to cover the cost of print materials as follows: • Developing manuals on operation and maintenance of hard and soft engineering interventions at an annual cost of US$3,000. *The estimated sub-cost is US$15,000.* • Preparing an operation and maintenance manual for groundwater recharge facilities. *The estimated sub-cost is US$1,000.* • Topographic mapping for groundwater recharge facilities for 200 ha at US$60 per ha. *The estimated sub-cost is US$12,000.* ***The total estimated cost is US$28,000***
26	This budget is reserved to cover the costs of training and workshops as follows: · Facilitation to exchange ideas and discuss problems or concerns with CBOs. *The estimated sub-cost is US$3,350.* · Training for WRD officers on the assessment and monitoring of groundwater resources and adaptive management for 50 people at US$100 each. *The estimated sub-cost is US$5,000.* · Training for extension agents, institutions and selected community members on data collection, record keeping, interpretation of climate information and translation to relevant climate forecasts and early warnings. *The estimated sub-cost is US$4,000.* · Training for technical staff from the WRD and MoA on adaptation techniques and approaches that are specific to water management. *The estimated sub-cost is US$9,800.* · Training workshops for local communities on the construction, operation and maintenance of watershed restoration measures and technologies. *The estimated sub-cost is US$75,000.* · Training on meteorological observation and data analysis. *The estimated sub-cost is US$1,500.* · Training on operation and maintenance of groundwater recharge facilities for an estimated 30 people at US$100 each. *The estimated sub-cost is US$3,000.* · Training on operation and maintenance of six water diversion schemes at US$500 each and two earth embankment dams at US$5,000 each for WUAs and communities. *The estimated sub-cost is US$13,000.*

S/N	Project output (description)
	· Training to community members on the benefits of CSA and livestock production methods: 5 training modules at US$3,000 each. *The estimated sub-cost is US$15,000.* · Training to extension agents and CBOs to oversee and coordinate implementation of CSA and livestock production methods: 5 training sessions at US$3,000 each. *The estimated sub-cost is US$15,000.* · Training to local communities in each KAA on the implementation and maintenance of CSA technologies and livestock production practices: 67 training sessions at US$150 each. *The estimated sub-cost is US$10,050.* · Training/technical facilitation for community members on implementation of income-generating activities. *The estimated sub-cost is US$7,690.* ***The total estimated cost is US$162,390.***
27	This budget is reserved to cover the cost of contracting service providers or companies to support the Departments of Land and Water and the PMU to: · undertake site selection and design of diversion schemes and oversee the construction thereof. *The estimated sub-cost is US$54,600.* · undertake survey, design and construction of two earth embankment dams at an estimated cost of US$313,100 per dam. *The estimated sub-cost is US$626,200.* ***The total estimated cost is US$680,800***
28	This budget is reserved to cover the cost of purchasing a project vehicle (1) and servicing it for the duration of the project. ***The total estimated cost is US$45,000.***
29	This budget is reserved to cover the cost of the purchasing and installation of materials and goods for the development and implementation of soil and water conservation measures over 9,000 ha of land in the Tsilima Plain. ***The total estimated cost is US$1,273,530***
30	This budget is reserved to cover the cost of the purchasing and installation of materials and goods. · Transportation of planting materials from the first year of implementation onwards. *The estimated sub-cost is US$50,400.* · Agricultural inputs for CSA @ US$50,000 per year. *The estimated sub-cost is US$250,000.* · Equipment and materials for alternative income-generating activities, including: i) beekeeping packages (500 packages at US$200 each); ii) poultry packages (750 packages at US$100 each); iii) small stock packages (500 packages at US$500 each); iv) agroforestry seedlings (50,000 seedlings at US$0.60 each); and v) 160 dairy cattle @ US$1,250 each. *The estimated sub-cost is US$655,000* ***The total estimated cost is US$ 955,400***
31	This budget is reserved to cover the cost to hire an international consultant to conduct a strategic risk analysis and social and environmental screening of project interventions under Component 3, including: i) collection of traditional and project-related knowledge for a central database (Output 3.1.2); and ii) documentation of the experiences and coping strategies of men and women in the project area (Output 3.1.3). The consultant will be hired for 40 days in the first year of project implementation, with the budget for 7 days (17.5% of total cost) covered under this component and the remaining balance covered under the other two components (see budget note **1 & 14**). The budget covers a daily fee @ US$700, a flight ticket @ US$2,000, terminal and visa fees @ US$258. The budget also covers the costs of an in-country mission for ten days, including a daily subsistence allowance for 2 days in Asmara @ US$153 per day and for 10 days elsewhere @ US$124 per day ***The total estimated cost is US$5,566***

S/N	Project output (description)
32	This budget is reserved to cover the cost of hiring: · an Education and Information Specialist (output 3.1.1) to facilitate the adoption of experiential learning methods, including the establishment of demonstration plots, farmer-farmer exchanges and field visits. *The estimated cost for this expert is US$30,000.* · a Gender Specialist (Output 3.1.3) to: i) facilitate the mainstreaming of gender issues and collaborate with the NUEW to ensure women's needs and interests are adequately represented in project implementation (US$40,000); ii) the development of a gender strategy (US$15,000); and iii) the facilitation of establishing a discussion forum to facilitate dialogue on gender issues (US$15,000). *The estimated cost for this expert is US$70,000.* · two national consultants to conduct a strategic risk analysis and social and environmental screening of project interventions under Component 3, including: i) collection of traditional and project-related knowledge for a central database (Output 3.1.2); and ii) documentation of the experiences and coping strategies of men and women in the project area (Output 3.1.3). The consultant will be hired for 40 days in the first year of project implementation, with the budget for 7 days (17.5% of total cost) covered under this component and the remaining balance covered under the other two components (see budget note **2** & **15**). The budget covers a daily fee @ US$250 and the costs of an in-country mission for ten days with a daily subsistence allowance for 10 days @ US$124 per day. For a total amount of US$ 4,041 ***The total estimated cost is US$104,041***
33	This budget is reserved to cover the cost of: · Preparing and publishing user-friendly literature on climate change and the benefits of CCA interventions. *The estimated sub-cost is US$5,000.* · Publishing guideline documents on *inter alia* CSA, watershed restoration and sustainable water use and management. *The estimated sub-cost is US$5,000.* ***The total estimated cost is US$10,000.***
34	This budget is reserved to cover the cost of training and workshops to: · Develop and implement a public awareness campaign, including: i) utilising local media to inform communities (US$10,000); ii) adopting experiential learning methods (US$5,000); iii) organising local-level awareness-raising campaigns for farmers on lessons learned and best practices (US$5,000); and iv) developing farmer radio shows for broadcasting (US$5,000). *The estimated sub-cost is US$25,000.* · Establish a good-practise database (US$12,500) and develop and implement a strategy for scaling up and replicating CCA interventions (US$20,000). *The estimated sub-cost is US$32,500.* · Facilitate the strategic dissemination of lessons learned: i) nationally through the knowledge and information-sharing platform (US$5,000); and ii) globally (US$5,000). *The estimated sub-cost is US$10,000.* · Develop user-friendly literature on CCA and monitor CCA interventions for CBOs and local communities. *The estimated sub-cost is US$10,000.* ***The total estimated cost in US$77,500.***
35	This budget under output 3.1.1. is reserved to cover the cost of training and programmes and awareness-raising campaigns at local level for farmers. This is UNDP's contribution to this activity (see budget note **30**). ***The total estimated cost is US$60,000***
36	This budget is reserved to cover the cost of office supplies for the project duration. ***The total estimated cost is US$10,000.***

S/N	Project output (description)
37	This budget is reserved to cover the cost to hire an international consultant to perform the MTR @ US$30,000 in the third year of project implementation and the TE @US$35,000 in the fifth year of project implementation. ***The total estimated cost is US$65,000. (This will be implemented by UNDP)***
38	This budget is reserved for an independent national consultant to perform: · the MTR @ US$15,000 in the third year of project implementation and the TE @US$20,000 in the fifth year of project implementation. *The estimated sub-cost is US$35,000.* ***The total estimated cost is US$35,000 (this will be implemented by UNDP)***
39	This budget is reserved for an independent national consultant to perform: · the mid-term and terminal tracking of the LDCF tracking tool in the third and fifth years of project implementation @ US$5,000 each. *The estimated sub-cost is US$10,000.* · the monitoring of the lessons learned and knowledge generation @ US$3,000 per year for three years starting from the third year of project implementation. *The estimated sub-cost is US$9,000.* · the monitoring of environmental and social risks and corresponding management plans @ US$3,500 for four years starting from the second year of project implementation. *The estimated sub-cost is US$14,000.* · the monitoring of the GAP @ US$5,000 per year for three years in the second, fourth and fifth years of project implementation. *The estimated sub-cost is US$15,000.* · the monitoring of the Stakeholder Engagement Plan @ US$5,000 per year. *The estimated sub-cost is US$25,000.* ***The total estimated cost is US$73,000.***
40	This budget is reserved to cover the cost of travel related to annual monitoring of indicators by the PMU. ***The total estimated cost is US$20,000.***
41	This budget is reserved to cover the cost of training and workshops as follows: · Revision of the training modules to include gender aspects associated with climate change. *The estimated sub-cost is US$35,000.* · Facilitation of community consultations with policymakers, the Project Board and the Project Technical Committee. *The estimated sub-cost is US$7,500.* · Regional forum held to review and integrate CCA interventions intro the Regional Development Plan, the NFSS and the IWRM Action Plan. *The estimated sub-cost is US$10,000.* · Inception workshop. *The estimated sub-cost is US$10,000.* · Workshop for the monitoring of the Stakeholder Engagement Plan @ US$7,000 per year. *The estimated sub-cost is US$35,000.* ***The total estimated cost is US$97,500.***
42	This budget is reserved to cover the cost of travel for the PMU for oversight and supervision missions @ US$4,000 per year. ***The total estimated cost is US$20,000.***
43	This budget is reserved for the procurement of information technology equipment for use by the PMU including computers @ US$2,500 each, digital cameras @ US$1,000 each, colour printers @ US$5,000 each and LCD screens @ US$825 each. ***The total estimated cost is US$30,000***
44	This budget is reserved to cover the cost of hiring professional services to conduct an annual audit of project finances @ US$3,000 per year. ***The total estimated cost is US$15,000.***

S/N	Project output (description)
45	This budget is reserved to cover the cost of hiring national consultants to provide technical advisory on climate changes and also other consultants required. ***The total estimated cost is US$112,770.***
46	This budget is reserved for a connectivity fee for the six PMU staff @ US$50 per person per month for the five years of project implementation. ***The total estimated cost is US$18,000.***
47	This budget is reserved to cover the cost of office supplies over the five years of project implementation. **The total estimated cost is US$10,000.**
48	This budget is reserved to cover miscellaneous costs @ US$1,000 per year. ***The total estimated cost is US$5,000.***
49	This budget is reserved to cover the cost of training and capacity building of the PMU staff, the implementing partner and other project partners on gender-sensitive project planning, the management of project risks, the reporting of project finances, the implementation of action plans, the application of adaptive management and other project-related skills @ US$9,000 per year. ***The total estimated cost is US$45,000.***

X. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of the State of Eritrea and UNDP, signed on 14th June 1994. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by the Ministry of Land, Water and Environment ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

XI. RISK MANAGEMENT

1. Consistent with the Article III of the SBAA *[or the Supplemental Provisions to the Project Document]*, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
   a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
   b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.

3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the United Nations Security Council Consolidated Sanctions List, and that no UNDP funds received pursuant to the Project Document are used for money laundering activities. The United Nations Security Council Consolidated Sanctions List can be accessed via https://www.un.org/securitycouncil/content/un-sc-consolidated-list.

4. The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.

   (a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").

   (b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment. SH may occur in the workplace or in connection with work. While typically involving a pattern of conduct, SH may take the form of a single incident. In assessing the reasonableness of expectations or perceptions, the perspective of the person who is the target of the conduct shall be considered.

5. a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will and will require that such sub-parties will take all appropriate measures to:

   i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;

   ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4 have not put in place its own training regarding

the prevention of SH and SEA, the Implementing Partner and its sub-parties may use the training material available at UNDP;

iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;

iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and

v. Promptly and confidentially, record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.

b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

6. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

7. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

8. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

9. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds.

10. In the implementation of the activities under this Project Document, UNDP places reasonable reliance upon the Implementing Partner for it to apply its laws, regulations and processes, and applicable international laws regarding anti money laundering and countering the financing of terrorism, to ensure consistency with the principles of then in force the UNDP Anti-Money Laundering and Countering the Financing of Terrorism Policy.

11. The Implementing Partner will ensure that its financial management, anti-corruption, anti-fraud and anti-money laundering and countering the financing of terrorism policies are in place and enforced for all funding received from or through UNDP.

12. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

13. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes in accordance with UNDP's regulations, rules, policies and procedures. The Implementing Partner shall

provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

14. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

15. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud, corruption or other financial irregularity, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud, corruption or other financial irregularity, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

16. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

17. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

18. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, mutatis mutandis, in all sub-contracts or sub-agreements entered into further to this Project Document.

XII. MANDATORY ANNEXES

Annex 1: GEF Budget Template

To be provided by MPSU after TBWP clearance.

Annex 2: GEF Execution Support Letter- (N/A)

Annex 3: Project Map and Geospatial Coordinates of the Project Area

The project area — Tsilima Plain and its upper catchment — is located at the central part of the country in the sub-*zoba* Dbarwa of the Debub Administrative Region. The area lies between 38°41'40"E and 38°53'50"E longitude and between 14°59'N and 15°14'N latitude.

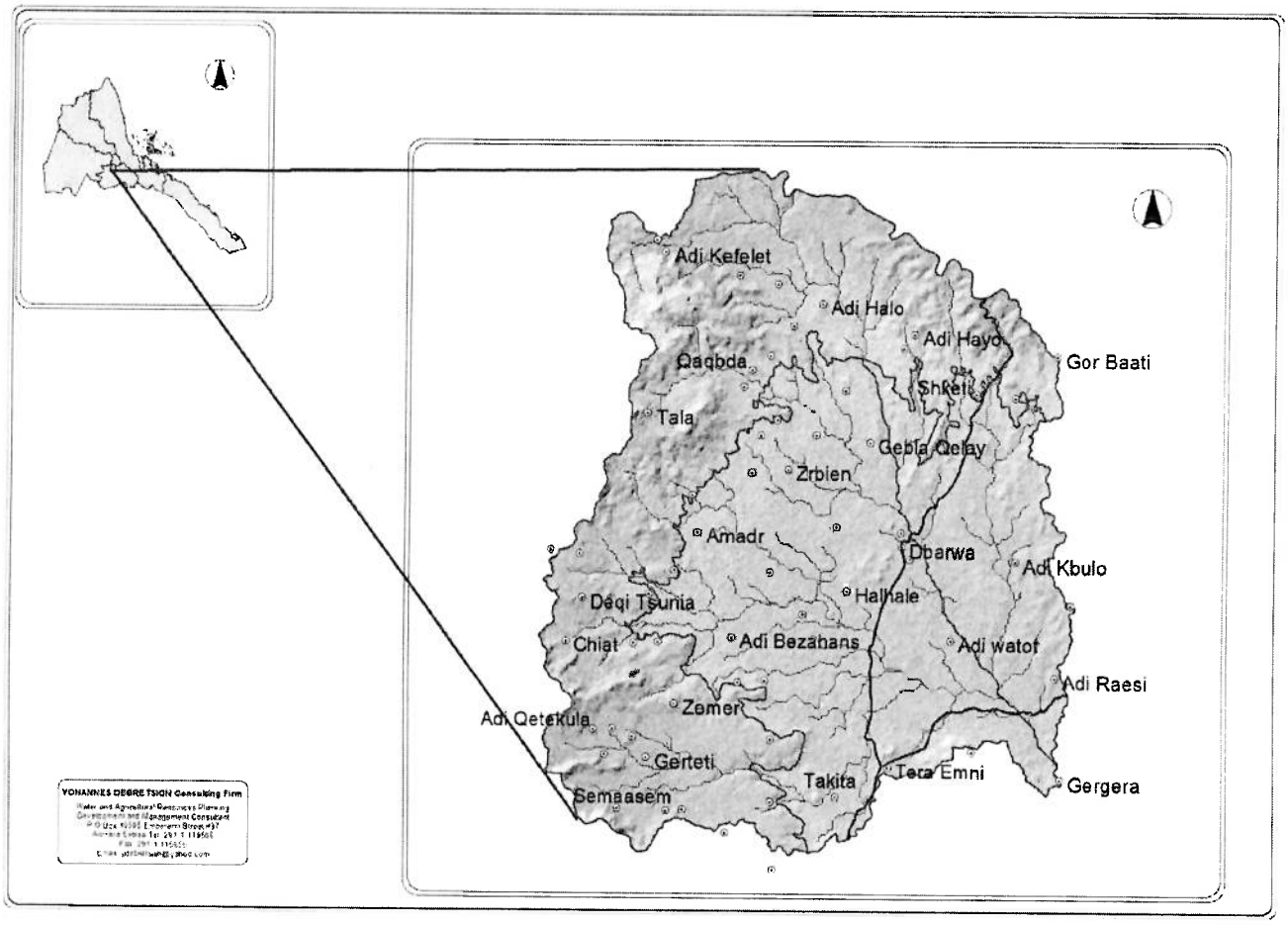


Figure 3.1. Project area location map, with major human settlements indicated.

Annex 4: Multi-Year Work Plan

Table 4.1. Multi-year work plan

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Output 1.1.1: Capacity and resource needs assessment undertaken, and capacity development strategy and training programme developed and implemented for NARI, including training on climate change and IWRM and on research and data collection, analysis and the packaging or publication of information. *Result indicator 1:* % of staff at targeted institutions receive training on climate change and water resources management, as well as research/data collection, analysis, and packaging/publication of information – disaggregated by gender. *Baseline:* Limited climate-related research capacity. *Target:* 75% of staff at targeted institutions receive training on climate change and water resources management, as well as research/data collection, analysis, and packaging/publication of information.	**1.1.1.1.** Undertake a capacity and resource needs assessment to identify gaps in staffing, skills, and facilities in NARI for addressing climate change.						NARI
	1.1.1.2. Develop and implement a capacity development programme to bridge the capacity gaps identified in the above assessment through on-the-job-training and by engaging with local researchers on climate change.						NARI
	1.1.1.3. Provide technical and financial support to NARI based on the results of the assessment.						MoLWE
Output 1.1.2: Network and information-sharing platform on CCA and CSA developed at national, *zoba* and sub-*zoba* levels. *Result indicator 2:* Network and information-sharing platform on CCA and CSA developed at national and sub-national levels. *Baseline:* There are few linkages between line ministries, academic and research institutions, therefore communication and the flow of information is limited. *Target:* By project endpoint, a network and information-sharing platform on CCA and CSA is developed and operational.	**1.1.2.1.** Establish a platform for dialogue between research institutions, relevant line ministries and extension services — including the NARI, MoLWE and MoA — in *zoba* Debub and sub-*zoba* Dbarwa's administrations.						NARI MoLWE MoA MSU & AMU *Zoba*, sub-*zoba* and *kebabi* administration
	1.1.2.2. Organise periodic gender-sensitive capacity development and knowledge-sharing sessions with staff, local institutions and farmers on the effectiveness of CCA interventions, food security, IWRM and climate change, as well as mandate researchers and academics to: i) present study papers, research results and lessons learned; and ii) produce publications that inform policy- and decision-making processes to ensure that climate change is considered on a national and regional level.						NARI MoLWE MoA MSU & AMU *Zoba*, sub-*zoba* and *kebabi* administration
	1.1.2.3. Facilitate NARI's linkages with international organisations and access to research information by: i) subscribing to written and electronic bulletins published by international research institutions and to internet-based research portals; and ii) participating in or attending regional forums, workshops, research internships and exchange visits.						NARI
	1.1.2.4. Provide technical and financial support for the: i) strengthening of the existing ICU at NARI; ii) strengthening the ASIS of the MoA; iii) support of the FFS extension approach of the MoA; and iv) establishing and/or reinforcing of linkages with international institutions working on CSA and related research.						NARI MoLWE MoA

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Output 1.1.3: Technical and financial support provided to NARI in association with other academic and research institutions to conduct research and produce research reports on CSA and production systems. *Result indicator 3:* Number of research reports on CSA and production systems. *Baseline:* National research does not adequately address climate change (in agriculture and production systems). *Target:* By project mid-point, at least one research report developed. By project endpoint, at least three research reports developed.	**1.1.3.1.** Develop local-level research capacity by implementing gender-sensitive research and training programmes relevant to CCA in the Tsilima Region, together with academic and research institutions, including NARI, MoA and other international collaborators. These programmes will include local-level resource tracking and M&E activities leading to adaptive management.						NARI MoA *Zoba*, sub-*zoba* and *kebabi* administration
	1.1.3.2. Facilitate the production and publication of research reports, including preparation of policy briefs.						NARI
Output 1.1.4: Climate information and monitoring systems developed in association with relevant line ministries, departments — in particular the MSU of the MoTC and the AMU of the MoA — and local communities based on data received from hydro-meteorological stations installed under Output 2.2.2. *Result indicator 4:* Number of people/geographical areas with access to improved, climate-related early warning information. (Adaptation Monitoring and Assessment Tool (AMAT) Indicator 7/8) *Baseline:* Lack of a coordinated climate and information system. *Target:* Number of people, including % female and % of targeted area (e.g., % of country's total area).	**1.1.4.1.** Develop and implement a comprehensive gender-sensitive capacity-development programme for the MSU and the AMU to address gaps in skills, training, equipment, and facilities with the help of external entities and international experts.						MSU AMU
	1.1.4.2. Provide gender-sensitive training on meteorological observation and analysis to the MSU and the AMU and other institutions and stakeholders involved in the collection and gathering of meteorological data. Community members will be trained in household data collection.						MSU AMU
	1.1.4.3. Provide technical and financial support to the MSU, the AMU and other stakeholders to facilitate the establishment of a community based EWS in sub-*zoba* Dbarwa.						MoLWE
Output 1.2.1: Capacity and resource needs assessment, development and training programmes implemented in institutions involved in extension services on *inter alia* sustainable land, forestry, and water resources management. *Result indicator 5:* Extension agents in sub-*zoba* Dbarwa receive training on climate risk integration in extension support programmes. *Baseline:* Extension agents have received limited training and exposure to climate change. *Target:* Capacity increased to a score of 3. Target to be verified during Year 1 of project implementation.	**1.2.1.1.** Conduct a needs assessment for CCA training.						MoLWE MoA
	1.2.1.2. Provide financial and technical support, including equipment and facilities identified as limited in the capacity and resource needs assessment.						MoLWE MoA
Output 1.2.2: Extension packages reviewed and updated to include best practices and other relevant materials through the provision of technical and financial support at national, *zoba*, sub-*zoba* and *kebabi* levels. *Result indicator 6:* Extension packages are reviewed and revised to include best practices identified. *Baseline:* Extension packages are limited.	**1.2.2.1.** Review and update the extension services package to include aspects that are not covered in the current portfolio and pilot the revised extension services package in sub-*zoba* Dbarwa.						MoA
	1.2.2.2. Train extension agents — both men and women — on the revised extension packages, which will support the transition towards CSA and establish an effective link with farmers from all social groups.						MoA
	1.2.2.3. Develop a strategy to build technical capacity of the MoA's AED to enable the development and transfer of CSA technologies and livestock production practices.						MoA

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Target: By project endpoint, extension packages updated to include best practices.	**1.2.2.4.** Develop manuals and leaflets as reference materials and guidelines on agricultural and ecological interventions, as well as methods for monitoring the effectiveness thereof, with due consideration of gender-specific challenges. These documents will be produced on an annual basis and be distributed amongst extension agents.						MoA MoLWE NARI
Output 1.2.3: A long-term strategy developed and implemented to monitor and evaluate climate-smart: i) water resources use and management; ii) agricultural practices; and iii) livestock productivity. *Result indicator 7:* Long-term strategy developed and implemented for M&E of climate-smart extension services. *Baseline:* There is no strategy for M&E climate-smart extension services. *Target:* By project mid-point, a strategy for M&E is developed. By project endpoint, the strategy for M&E is implemented.	**1.2.3.1.** Develop an M&E methodology in pilot areas, taking into consideration biophysical and socioeconomic indicators, and develop performance targets for project interventions.						MoLWE
	1.2.3.2. Train community members, extension agents and NARI technical staff on the M&E methods, techniques, and indicators, with specific attention to capacitating vulnerable members of these groups.						MoLWE
	1.2.3.3. Document processes, implement M&E methodology and synthesise lessons learned and best practices to inform local-level land-use planning and the up scaling of CCA interventions.						MoLWE
Output 2.1.1: Based on the assessments undertaken in Output 2.2.1: i) identify and map drought- and flood-prone areas; and ii) develop and implement community-based land-use and area development plans in the Tsilima Region. *Result indicator 8:* Number of drought and flood prone area maps developed. *Baseline:* Drought and flood prone areas have not been identified. *Target:* At least three drought and flood prone area maps developed in targeted areas.	**2.1.1.1.** Support the development of national drought and flood management action plans.						
	2.1.1.2. Generate maps identifying flood- and drought-prone areas under climate change conditions that pose a threat to the livelihoods of local communities in the KAAs — based on the improved hydrological and meteorological data and assessments under Outcome 2.2 and guided by the lessons learned from programmes such as the United Nations Convention to Combat Desertification Drought Initiative.						MoLWE
	2.1.1.3. Conduct a comprehensive VRA[23].						
	2.1.1.4. Provide technical and financial support to undertake land capability classification, including soil surveys and soil chemical analyses, ameliorated by information from classification initiatives conducted by the FAO and in collaboration with the MoLWE's DoL, NARI, HAC and other institutions with appropriate expertise and facilities.						MoLWE
	2.1.1.5. Engage with sub-*zoba* administration, KAAs, extension agents and local communities to assist communities in the development of climate-resilient land-use and area development plans.						MoLWE
Output 2.1.2: Existing CBOs strengthened, including *inter alia* VACs, WUAs and farmer associations to coordinate local-level participation in CCA, land use and development planning. *Result indicator 9:* Number of CBOs formed and operational in target areas. *Baseline:* To be determined during Year 1 of project implementation.	**2.1.2.1.** Provide financial and technical support for the strengthening/establishment of CBOs including VACs, WUAs, farmer associations and Land Use Committees at local level, without perpetuating existing social and economic inequalities.						MoLWE *Zoba*, sub-*zoba* and *kebabi* administration
	2.1.2.2. Review existing policy and institutional frameworks and support the implementation and alignment of community by-laws for sustainable land, forestry, and water resources management.						MoLWE *Zoba*, sub-*zoba* and *kebabi* administration

[23]VRA, Vulnerability Reduction Assessment, as per guidance in **Annex 20**.

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Target: At least 6 CBOs *established* and operating effectively in targeted areas. At least 75% of Village Development Committees trained on participatory land use planning, monitoring and implementation of land-use plans.	**2.1.2.3.** Hold gender-sensitive training workshops, including exchange experiences and meetings, wherein diverse stakeholders exchange ideas, provide support to implement and develop by-laws and discuss common problems.						MoLWE MoA *Zoba*, sub-*zoba* and *kebabi* administration
	2.1.2.4. Create a gender-sensitive forum for discussions between CBOs of neighbouring KAAs.						MoLWE *Zoba*, sub-*zoba* and *kebabi* administration
Output 2.1.3: Technical support provided to the *zoba* and sub-*zoba* administrations to inform the land redistribution process through the: i) classification and mapping of land according to potential land uses; and ii) assessment of the availability and quality of resources (e.g., soil and water). *Result indicator 11:* Assessment of land-use area and mapping of coordinates. *Baseline:* Delays in assessing land and mapping individual plots. *Target:* Land-use areas identified, and coordinates mapped, and quality of land assessed.	**2.1.3.1.** Assess availability and quality of resources through *inter alia* land capability classifications, soil surveys, ground truthing and remote sensing analysis to demarcate individual parcels of land according to resources and potential land use.						MoLWE MoA *Zoba*, sub-*zoba* and *kebabi* administration
	2.1.3.2. Hold gender-sensitive training workshops for extension agents and subject matter specialists on GIS skills, land surveying and classification of land for climate-resilient land-use planning.						MoLWE
Output 2.2.1: Groundwater and surface water resources assessment undertaken and a groundwater monitoring strategy — including a system of data collection and information exchange on water use and projected demand — developed and implemented in the Upper Mereb catchment. *Result indicator 12:* Number of functioning long-term monitoring field sites established in targeted areas for monitoring groundwater and surface water resources. *Baseline:* There is no monitoring of groundwater and surface water resources. *Target:* By project endpoint at least three long-term monitoring sites established in target areas in the Tsilima Region.	**2.2.1.1.** Undertake a groundwater and surface water resources assessment and develop a groundwater inventory.						MoLWE
	2.2.1.2. Develop comprehensive water development and management plans based on the surface water and groundwater resources assessment.						MoLWE
	2.2.1.3. Purchase and install groundwater monitoring and stream gauge equipment, including at least one automatic stream flow and four staff gauges with sediment-sampling programme to monitor the flow and sediment loads of the major streams draining the project areas.						MoLWE
	2.2.1.4. Establish and implement a groundwater monitoring strategy for the Upper Mereb catchment and facilitate dissemination of data to WRD, relevant decision-makers and local communities.						MoLWE
	2.2.1.5. Review the 2009 IWRM Action Plan to support appropriate responses to climate change impacts on the water sector and mainstream climate risk into IWRM.						MoLWE
	2.2.1.6. Provide technical support to strengthen WRD's water resources information database and management.						MoLWE
	2.2.1.7. Develop gender-sensitive water management tools and guidelines for dissemination by WRD to decision-makers and local communities.						MoLWE
	2.2.1.8. Provide gender-sensitive training to WRD on the assessment and monitoring of groundwater resources and adaptive management of the water sector in the face of a changing climate.						MoLWE
Output 2.2.2: Hydro-meteorological stations established and/or refurbished at Mendefera, Dbarwa, Halhale, Tala, Dekitsuna, Adi Gebru, Adi Felesti, Shiketi and Gerteti.	**2.2.2.1.** Purchase and install three new Class 3 meteorological stations in the upper catchment at the Tala, Dekitsuna and Adi Gebru villages.						MoLWE
	2.2.2.2. Refurbish the existing Class 4 meteorological station at Mendefera to a Class 1 meteorological station.						

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Result indicator 13: Hydro-meteorological stations installed/ refurbished at Mendefera, Dbarwa, Halhale, Tala, Dekitsuna, Adi Gebru, Adi Felesti, Shiketi and Gerteti. *Baseline:* Hydro-meteorological stations are no longer operational and/or technology is outdated. *Target:* At least two Class 1 hydro-meteorological stations installed/refurbished at Mendefera and Halhale, one Class 2 refurbished at Dbarwa and three Class 3 refurbished at Adi Felesti, Shiketi and Gerteti.	**2.2.2.3.** Refurbish the existing Class 2 meteorological station at Halhale research station to a Class 1 meteorological station.						MoLWE
	2.2.2.4. Refurbish the existing Class 4 meteorological station at Dbarwa to a Class 2 meteorological station.						
	2.2.2.5. Refurbish the newly established Class 4 meteorological stations at Adi Felesti, Shiketi and Gerteti to a Class 3 meteorological stations.						
	2.2.2.6. Establish an appropriate communication system to transmit: i) meteorological information to the MSU and AMU; and ii) transfer early warnings from the MSU and AMU to relevant KAAs in sub-*zoba* Dbarwa — including weather forecasts and predictions and seasonal forecasts that will be useful for informing preparedness for floods and droughts and outbreaks of vector-borne diseases such as malaria and dengue fever.						MoLWE MSU AMU *Zoba*, sub-*zoba* and *kebabi* administration
	2.2.2.7. Provide gender-sensitive training for technical staff from NARI, extension agents, other relevant institutions and selected community members on data collection and record-keeping.						MSU
	2.2.2.8. Provide gender-sensitive training to MSU and AMU staff on the interpretation of climate information and translation into locally relevant climate forecasts and early warnings.						MoLWE
Output 2.2.3: Climate-smart watershed restoration and management measures identified and implemented, including: i) water harvesting and storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures. *Result indicator 14:* Number of hectares under watershed rehabilitation and management measures. *Baseline:* Rehabilitation and management measures are not being implemented at a watershed level. *Target:* By project endpoint, watershed rehabilitation and management measures will be implemented over 9,000 ha of land.	**2.2.3.1.** Provide financial and technical support to WRD to develop and pilot IWM practices in the Tsilima Region.						MoLWE
	2.2.3.2. Promote rainwater harvesting by treating land surfaces to decrease infiltration and make run-off available for irrigation and other uses.						MoLWE
	2.2.3.3. Develop and implement soil and water conservation measures over 9,000 ha of land in the Tsilima Region.						MoLWE
	2.2.3.4. Promote the natural regeneration and reforestation of degraded watersheds.						MoLWE
	2.2.3.5. Establish and/or upgrade existing forestry nursery sites in sub-*zoba* Dbarwa and at NARI.						MoLWE
	2.2.3.6. Engage with local communities in the planning and design of: i) water-harvesting and -storing interventions; ii) flood diversion and water-spreading facilities; and iii) on-farm and off-farm soil and water conservation measures.						MoLWE *Zoba*, sub-*zoba* and *kebabi* administration
Output 2.2.4: Local communities and households receive gender-sensitive training to undertake sustainable water use and management, including *inter alia* water harvesting and the construction and maintenance of hard and soft engineering interventions.	**2.2.4.1.** Provide training to technical staff from the WRD and the MoA — at *zoba* and sub-*zoba* levels — on adaptation techniques and approaches specific to water management.						MoLWE
	2.2.4.2. Hold gender-sensitive training workshops for local communities — including farmer-farmer exchanges and visits to demonstration plots — on the construction, operation and maintenance of watershed restoration measures and technologies.						MoLWE *Zoba*, sub-*zoba* and *kebabi* administration

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Result indicator 15: % increase in number of: i) technical staff; and ii) local community members, trained on meteorological observation, sustainable water use and management, and CSA technologies — disaggregated by gender. *Baseline:* Limited training of technical staff and awareness of local communities on meteorological observation, sustainable water use and management and CSA technologies. *Target:* At least 75% of technical staff trained. At least 50% of local community members trained.	**2.2.4.3.** Develop manuals on the operation and maintenance of hard and soft engineering interventions, including flood control measures, water harvesting interventions and soil and water conservation measures.						MoLWE
Output 2.3.1: CSA practices — informed by research product generated under Output 1.1.3 and land-use and area development plans prepared under Output 2.1.1 — developed and transferred to farmers, including: i) drought- and disease-resistant varieties; ii) integrated crop-livestock systems; iii) conservation agriculture; iv) agroforestry; v) silvo-pasture; and vi) rangeland and livestock management. *Result indicator 16:* % increase in the number of farmers taking up CSA practices — disaggregated by gender. *Baseline:* Baseline to be verified during Year 1 of project implementation. *Target:* At least 50% of farmers trained in climate-smart technologies. At least 30% of livestock keepers adopt alternative livestock management. At least 20% increase in number of farmers in target villages consistently applying climate-smart technologies introduced by the project.	**2.3.1.1.** Identify and implement a range of CSA technologies and methods in and around pilot communities.						MoLWE MoA NARI
	2.3.1.2. Establish demonstration plots at each of the project intervention sites to demonstrate CSA technologies and methods. Organise gender-sensitive experience-sharing events, where farmers and community members from nearby villages are brought to the demonstration plots.						MoLWE MoA NARI
	2.3.1.3. Train extension agents and CBOs to oversee and coordinate local community involvement in the implementation of CCA interventions, CSA technologies and livestock production practices, with specific attention to capacitating vulnerable members of these communities.						MoLWE MoA NARI
	2.3.1.4. Train local communities on the implementation and maintenance of CSA technologies and livestock production practices, with specific attention to capacitating vulnerable members of these communities.						MoLWE MoA *Zoba*, sub-*zoba* and *kebabi* administration
Output 2.3.2: Alternative income-generating livelihoods identified and implemented in selected communities. *Result indicator 17:* Population benefits from the adoption of diversified, climate-resilient livelihood options — disaggregated by gender (AMAT Indicator 3). *Baseline:* The number of households adopting alternative livelihoods will be determined during Year 1 of project implementation. *Target:* Number of people, including % female and % of targeted population.	**2.3.2.1.** Conduct an assessment to identify the actual beneficiaries of alternative income-generating activities.						
	2.3.2.2. Identify and implement appropriate and specific income-generating activities.						
	2.3.2.3. Provide technical and financial support for the identification and implementation of selected income-generating activities — in addition to those supported by the GoSE.						MoLWE
	2.3.2.4. Train community members on value-addition activities, including agro-processing and marketing skills, with specific attention to capacitating vulnerable members of these communities.						MoLWE
	2.3.2.5. Support access to markets in and outside the Tsilima Region.						
Output 3.1.1: Public awareness-raising and education campaigns conducted in the Tsilima Region. *Result indicator 19:* Public awareness activities carried out and population reached (AMAT Indicator 5). *Baseline:* Limited awareness of effects of climate change.	**3.1.1.1.** Conduct a public awareness-raising campaign using local media to inform communities on the effects of climate change, the benefits of appropriate CCA interventions and the appropriate methods for monitoring these interventions, which should include the development and dissemination of easily comprehensible, user-friendly knowledge products in various local languages.						MoLWE

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
Target: Number of people/households aware of climate change.	**3.1.1.2.** Organise local-level awareness-raising campaigns and training programmes for farmers on lessons learned and best practices from the implementation of CCA interventions, with training activities tailored to different genders, ages and capacities.						MoLWE
	3.1.1.3. Arrange awareness-raising sessions — such as seminars, workshops, and competitions — and education campaigns at local schools to teach learners about the benefits of CCA interventions, including a practical aspect in which learners are encouraged to participate in field visits and restoration activities and initiatives such as youth competitions, tree planting and fieldwork.						MoLWE
	3.1.1.4. Provide support for the development and broadcasting of farmer radio shows that provide easily accessible and useful agricultural and weather-related information to rural households in various languages and time slots to reach the widest possible audience.						MoLWE
Output 3.1.2: Communication strategy developed and implemented for sharing lessons learned and best practices to: i) other *zobas*, sub-*zobas* and *kebabis*; and ii) high-level decision-making institutions. *Result indicator 20:* Long-term strategy developed and implemented for scaling up lessons learned and using lessons learned for informing policy- and decision-making. *Baseline:* There is no strategy for scaling up lessons learned and using lessons learned for informing policy- and decision-making. *Target:* By project mid-point, a strategy for M&E is developed. By project endpoint, the strategy for M&E is implemented.	**3.1.2.1.** Develop and implement a communication strategy and action plan for scaling up and replicating project activities and lessons learned throughout *zoba* Debub and Eritrea.						MoLWE
	3.1.2.2. Collate and synthesise lessons learned, and best practices based on results from the project indicators, including the benefits of CCA interventions, according to a standardised system for sharing nationally through the information-sharing platform that integrates information from various CCA projects in Eritrea and other regional and global information-sharing initiatives.						MoLWE NARI
	3.1.2.3. Establish a good-practice database that includes traditional and project-supported activities.						MoLWE
	3.1.2.4. Establish a system to periodically inform decision-makers on best practices and approaches for integrated landscape management that are locally appropriate.						MoLWE
	3.1.2.5. Facilitate community consultations with policymakers, the Project Board and the Project Technical Committee to support policymakers to review and integrate CCA interventions into the regional development plan, the NFSS and the IRWM Action Plan.						MoLWE *Zoba*, sub-*zoba* and *kebabi* administration
Output 3.1.3: Gender strategy developed and implemented that includes capacity building and enhancing the participation of women in the planning, selection, implementation and monitoring of CCA approaches and practices. *Result indicator 21:* Gender strategy developed and implemented for enhancing the participation of women in the project implementation. *Baseline:* There is no gender strategy. *Target:* By project mid-point, a gender strategy is developed. By project endpoint, the gender strategy is implemented.	**3.1.3.1.** Develop a gender strategy to strengthen the adaptive capacity of women, men, and their households to prepare for the adverse effects of climate change.						MoLWE
	3.1.3.2. Update and extend the portfolio of training modules generated during this project to include gender aspects associated with climate change and land degradation and to tailor training programmes to the local context in the Tsilima Region.						MoLWE
	3.1.3.3. Collaborate with the NUEW to ensure that women's needs and interests are represented in the: i) preparation of land-use and restoration plans; ii) strengthening or establishment of CBOs; and iii) development of community by-laws, under Outcome 2.1.						MoLWE
	3.1.3.4. Support — or, if no such structure exists, create — a discussion forum to facilitate dialogue on gender issues between the CBOs and *kebabi* and sub-*zoba* administrations.						MoLWE

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY
		Y1	Y2	Y3	Y4	Y5	
	3.1.3.5. Document lessons learned from the experiences and coping strategies of women and men related to the effects of climate change to be shared nationally through the information-sharing platform that integrates information from various projects in Eritrea, for future project and programme design.						

ANNEX 5. UNDP Social and Environmental Screening Procedure (Attached Separately) - Link

ANNEX 6. UNDP Risk Register (Attached separately) - Link

ANNEX 7. Overview of Project Staff and Technical Consultancies (Attached separately) - Link

ANNEX 8. Stakeholder Engagement Plan (Attached separately) - Link

ANNEX 9. Environmental and Social Management Framework (ESMF) and other SES Frameworks/Plans (Attached separately) - Link

ANNEX 10. Gender Analysis and Gender Action Plan (Attached separately) - Link

ANNEX 11. Procurement Plan (to be prepared during the inception phase)

ANNEX 12. Report of PPG Baseline Assessment (Attached separately) - Link

ANNEX 13. Additional Agreements (N/A)

ANNEX 14. Signed LOA between UNDP and Implementing Partner Requesting UNDP Support Services (N/A)

ANNEX 15. LDCF Tracking Tool for CCA (Attached separately) - Link

ANNEX 16. GEF 7 Taxonomy (Attached separately) - Link

ANNEX 17. PACT and HACT Assessment (Attached separately)

MoFND - PCAT
MoLG- PCAT
MoLWE -PCAT

MoFND – HACT Assessment
MoLG - HACT Assessment
MoLWE - HACT Assessment

ANNEX 18. National Capacity Needs Self-Assessment for Global Environmental Management in Eritrea (Attached separately) - Link

ANNEX 19. UNDP Quality Assurance Report (Attached separately) - Link

ANNEX 20. UNDP Guide to the Vulnerability Reduction Assessment (Attached separately)- Link