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Project title: Mainstreaming climate risk considerations in food security and IWRM in Tsilima Plain and upper catchment area.		
Country: Eritrea	Implementing Partner: Ministry of Land, Water and Environment/Department of Environment Responsible Partners: Ministry of Local Government (MoLG) —Zoba Debub Administration/Department of Land & Agriculture	Management Arrangements: National Implementation Modality (NIM)
UNDAF/Country Programme Outcome: SPCF Outcome 7: By 2021, environmental and natural resources management is gender responsive, and sustainable, negating the impacts of ecosystem degradation, climate change, and strengthening community resilience to disasters.		
UNDP Strategic Plan Output: Output 1.4: Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented		
UNDP Social and Environmental Screening Category: Low	UNDP Gender Marker: 2	
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Brief project description: The demand for agricultural production to supply food for a rapidly increasing population in the Central Highlands of Eritrea is placing pressure on land, forest and water resources through: i) expansion of agricultural land into natural habitats and ecosystems; ii) overgrazing and degradation of rangelands; and iii) unsustainable abstraction/pumping of groundwater. Furthermore, insecurity of tenure – as a result of the traditional *diessa* land tenure system – is a disincentive for farmers to implement long-term measures for soil and water conservation. Consequently, ecosystems continue to be degraded and therefore being compromised in their provision of the ecosystem goods and services that underpin community livelihoods. This results in reduced agricultural productivity, threatening the food security of local communities.

Climate change poses additional threats to the functional integrity of ecosystems, local hydrology, agricultural productive systems and community livelihoods, particularly in the Tsilima region where the population pressures are particularly pronounced. More specifically, increased variations in rainfall, elevated temperatures and greater rates of evapotranspiration are likely to have direct impacts on run-off formation and groundwater recharge capacities of the ecosystems.

The preferred solution is to reduce the climate change vulnerability of local communities in the Tsilima 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 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 climate change adaptation to inform a process of adaptive management. However, there are multiple institutional, technical and financial barriers to achieving the preferred solution, including: i) limited technical capacity and information available for the analysis of climate risks; ii) few incentives for investing in long-term, climate-smart measures; and iii) weak governance systems for the mainstreaming of climate risks into land-use planning and development.

The LDCF-financed project will contribute to overcoming these barriers by: i) enhancing the capacity of academic and research institutions to conduct research and generate data to inform climate change and adaptation options; ii) increasing the technical capacity of relevant government departments to plan and implement adaptation interventions as well as provide climate-smart advice and extension services to local communities; iii) implementing integrated water management measures, climate-smart agricultural and livestock practices, and watershed restoration measures; and iv) raising public awareness and training local communities on the benefits of an ecosystem-based approach to climate change adaptation.

FINANCING PLAN	
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UNDP TRAC resources	USD 2,500,000
Cash co-financing to be administered by UNDP	
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PARALLEL CO-FINANCING (all other co-financing that is not cash co-financing administered by UNDP)	
Government	USD 25,000,000
(2) Total co-financing	USD 25,000,000
(3) Grand-Total Project Financing (1)+(2)	USD 36,550,000






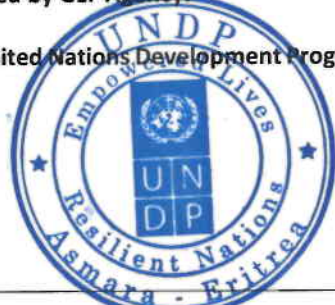
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List of Acronyms and Abbreviations

AAKN	African Adaptation Knowledge Network
AAP	Africa Adaptation Programme
AED	Agricultural Extension Department
AMAT	Adaptation Monitoring and Assessment Tool
BSAP	Biodiversity Strategy and Action Plan
CBO	Community-based Organisation
CCA	Climate change adaptation
CO	Country Office
CPAP	Country Programme Action Plan
CSA	Climate-smart agriculture
DoE	Department of Environment
DoL	Department of Land
EWS	Early Warning System
FAS	Farmer Advisory Services
FNC	First National Communication
FSP	Full Sized Project
GAN	Global Adaptation Network
GCM	Global Circulation Models
GIS	Geographic Information Systems
GoSE	Government of the State of Eritrea
ICU	Information Communication Unit
I-PRSP	Interim Poverty Reduction Strategy Paper
IWRM	Integrated Water Resources Management
KAA	Kebabi Administration Area
LDC	Least Developed Country
LDCF	Least Developed Country Fund
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MEA	Multi-lateral Environmental Agreement
MOLWE	Ministry of Land, Water and Environment
MND	Ministry of National Development
MoA	Ministry of Agriculture
MoTC	Ministry of Transport and Communications
MSU	Meteorological Services Unit
NAP	National Action Programme
NAPA	National Adaptation Programme of Action
NARI	National Agricultural Research Institute
NBSAP	National Biodiversity Strategic Action Plan
NCSA	National Capacity Needs Self-Assessment
NEAPG	National Environmental Impact Assessment Procedures and Guidelines

NEMP-E	National Environmental Management Plan
NFIS	National Food Information System
NFSS	National Food Security Strategy
NTFP	Non-timber Forest Product
NUEW	National Union of Eritrean Women
PC	Project Coordinator
PFAA	Project Finance Administration Assistant
PIF	Project Identification Form
PIR	GEF Project Implementation Report
PMC	Project Management Cost
POPP	Programme and Operations Policies and Procedures
PPG	Project Preparation Grant
PSC	Project Steering Committee
PTA	Project Technical Assistant
ROAR	Results Oriented Annual Report
SCCF	Special Climate Change Fund
SGP	Small Grants Programme
SLM	Sustainable Land Management
SNC	Second National Communication
SPCF	Strategic Partnership Cooperation Framework
STAP	GEF Scientific Technical Advisory Panel
TOR	Terms of Reference
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNDP-GEF	UNDP Global Environmental Finance
UNFCCC	United Nations Framework Convention on Climate Change
VAC	Village Agricultural Committee
VCF	Village Contact Farmers
WRIU	Water Resources Information Unit
WRD	Water Resources Department

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I. DEVELOPMENT CHALLENGE

Local communities within the Tsilima Region are primarily dependent upon rain-fed agriculture for their livelihoods¹. This dependence on rain-fed agriculture renders these communities vulnerable to climate-induced variability and change, and natural disasters – including floods and droughts – that exacerbate drivers of ecosystem degradation, such as: i) growing population pressure; ii) agricultural expansion into marginal lands and unsustainable agricultural practices; iii) limited coordination of land-use planning; and iv) poverty. Furthermore, inadequate management of natural resources leads to competition and conflicts over water resources. These conditions are expected to become worse under future climate change scenarios. Indeed, local communities within the Tsilima Region are already observing the impacts of climate change on groundwater availability – such as decreasing groundwater levels.

Future climate scenarios for Eritrea have yet to be developed or downscaled to the Central Highlands Zone². There is only one model and one emission scenario (A2) for regional climate simulations for the East African region, consequently the results thereof are not certain. Despite the uncertainty of the results, all scenarios indicate an increase in temperatures. Global projections of climate change indicate that by the end of the twenty-first century, the country's mean annual temperature is likely to increase by 1.4-5.8°C³. Some uncertainty with regards to the change in mean annual rainfall exists. However, the majority of climate change models indicate an increase in rainfall between October and December, and a decrease in rainfall during the January-March and April-July periods. Notwithstanding the current sources of uncertainty, there is consensus that droughts in Eritrea will likely increase under climate change. Increased rates of evaporation related to increased temperatures will negate any increases in rainfall that may be observed and lead to decreased soil moisture and reduced productivity. Current projections do not provide sufficient information to determine the increase in frequency of extreme events – such as flooding – although this has been identified as a threat in the National Adaptation Programme of Action (NAPA, 2007).

The majority of Eritrea's rural villages are located in areas where water supplies are not easily available or accessible. It is likely that the predicted warmer temperatures and uncertainty in precipitation patterns will affect evaporation and humidity. These changes will affect rural water sources and result in: i) a decrease in stream flows; ii) a drop in groundwater levels; iii) the drying up of springs; and iv) the disappearance of base flows. The shallow aquifers of the Tsilima Plain will be impacted by the predicted effects of climate change and associated extreme weather events. Notably, groundwater levels fluctuate seasonally as a result of rainfall variability and a decrease in groundwater availability has already been observed. Furthermore, the reduced annual flow of rivers and streams – which recharge the aquifers that supply wells – will have a negative impact on the supply of water for domestic, agricultural and livestock purposes.

Impacts of climate change on the availability of ground water have been observed in the Tsilima Plains and upper catchment areas – which is the area in which the LDCF-financed project will be implemented. The Tsilima Plains have been identified as a priority development area because of *inter alia* its natural resources base, which are favourable to intensify and diversify agricultural production. During the PPG phase, focus group discussions with local communities within Sub-Zoba Dbarwa confirmed that: i) the redistribution of land every 5-7 years in accordance with the traditional *diessa* land tenure system⁴ is a disincentive for implementing long-term improvements such as

¹ Government of the State of Eritrea. 2012. *Second National Communication*.

² 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 though, rather than sub-regional scale, as the model resolution is coarse (200km).

³ Government of Eritrea. 2001. *Initial National Communication*.

⁴ The traditional *diessa* land-tenure system provides equal access to land for use right. Allocation of land is determined using fair and equitable principles, including some gender considerations. Smaller parcels of land are allocated to individual households on a rotational basis every five to seven years, though this has increased to 10-12 years in recent years. The redistribution and allocation of land is undertaken according to traditional soil classification schemes which are used to categorise available arable land into different groups, including: i) fertile, ii) medium; and iii) unfertile. Each household is allocated land from the different categories by the village elders so that all households are able to grow crops. However, the allocation of land is rarely sufficient

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, as well as destruction of topsoil structure through trampling; iii) land cannot be sold or used as collateral, limiting the availability of credit for making farm improvements; and iv) new families have to be accommodated into the allocation of land which generally results in the reduction of household plot sizes.

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 for Global Environmental Management (NCSA) was undertaken. This assessment noted that the relevant ministries – including Ministry of Land, Water and Environment (MOLWE) and Ministry of Agriculture (MoA) – are in need of additional staff with updated skills in climate risk identification, analysis and management. The NCSA also identified capacity gaps including: i) weak 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 designing strategies for mitigation, adaptation and management of the impacts. The LDCF-financed project will therefore contribute to the preferred solution by implementing a suite of complementary measures to address these barriers.

- *Limited inter-institutional coordination with regards to planning for climate change adaptation:* An effective national response to climate change requires coordination between relevant ministries and institutions, including inter alia the MOLWE, MoA, Ministry of Transport and Communication (MoTC), and National Agricultural Research Institute (NARI). There has been limited coordination between government departments, academic institutions and climate change projects in Eritrea. Efforts to improve coordination between the MOLWE and MoA are restricted by challenges such as inadequate human resources. The shortage of skilled staff has hindered the coordination of donor-funded environmental and climate-related projects, as well as the implementation of multi-lateral environmental agreements. Consequently, there is a need to mainstream climate change into sectoral policies, strategies and development plans.
- *Limited institutional and technical capacity to plan and implement climate change adaptation interventions:* Although climate change is recognised as a matter of national importance within Eritrea's NAPA, the technical and scientific knowledge and understanding of climate change and adaptation within the country is limited, although efforts to enhance them have been noted. This has restricted the ability of Agricultural Extension Department (AED) - within the MoA – to assist farmers in employing the appropriate and responsive strategies and tools for adapting to climate change. Furthermore, the ability to utilise various models to produce a range of projections for Eritrea, prepare seasonal forecasts and issue early warnings is challenged by shortage of qualified meteorologists in the country. The shortage of skilled personnel is partly attributed to the low number of graduates with a degree in either Mathematics, Physics or Statistics. Gaps in the technical capacity of government technical staff can also be attributed to: i) insufficient training of staff employed in relevant departments within the MOLWE and MoA; and ii) limited technical skills at the MOLWE, MoTC and MoA – particularly at the Kejabi level.
- *Limited transfer of knowledge and technology:* There is no well-organised system for documenting and disseminating best practices for CCA. Furthermore, the provision of knowledge-based advice from extension agents to farmers is limited by the quantity and quality of information available to them. Coordination and communication between NARI and extension agents is 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) does not have well established links with other research institutions and there are no equivalent information and communication units within government departments in Eritrea at neither national and nor sub-national

to meet individual households' annual food requirements. While the *diessa* land-tenure system has prevented landlessness, it is generally believed to have had a detrimental effect on sustainable land management and has led to the fragmentation of landholdings.

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/stations:* During Eritrea's 30 year war for independence, many of the country's meteorological stations were destroyed and the Government of the State of Eritrea's (GoSE) ability to operate and maintain the hydro-meteorological network was severely constrained. At the end of the war in 1991, the collection of climate and weather data commenced on a regular basis. As a result, Eritrea has an absence of reliable previous climatic data to inform the development of accurate national climate change scenarios and subsequent adaptation planning in the country. The MoTC, MOLWE and MoA have subsequently established meteorological stations across the country. However, one of the legacies of Eritrea's colonial history is the lack of an institutional framework of systematic 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 infrastructure, which hinders the collection and transfer of data. The country's Initial Communication to the UNFCCC emphasises that the hydro-meteorological data collection activities currently rely on field equipment with a capability for automatic data recording, which is then physically transferred to the MSU for downloading. The transfer of such data is restricted by inadequate telecommunication infrastructure. Internet connectivity and mobile signals are restricted, particularly within the rural villages because of the topography and limited infrastructure. Subsequently, institutions do not have the facilities to acquire real-time data or access national, regional and international databases. This is a barrier to the comprehensive and effective use of climate information and dissemination of early warnings in Eritrea, and limits appropriate responses to climate change.
- *Limited knowledge and awareness of the value of ecosystems, climate change and climate change adaptation interventions:* There is limited knowledge and awareness of the role of ecosystems across Eritrea in reducing the negative effects of climate change, particularly at the level of resource users. Furthermore, the Zoba and sub-Zoba administrations have limited knowledge on how an integrated approach to adaptation can increase the adaptive capacity of local communities to the effects of climate change. Limited knowledge of the benefits of such an approach is therefore 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 a result of limited knowledge of the benefits of maintaining functional ecosystems. For example, local communities are currently largely unaware that degradation of the watershed 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:* Farmers across Eritrea are unwilling to make long-term investments in land when such land will be reallocated to another farmer. In accordance with the traditional *diessa* land tenure system in the Tsilima Region, the reallocation of community land within villages occurs after a period of no more than seven years. The *diessa* system is perceived to be a barrier to farmers investing in cost-effective and sustainable measures of addressing climate change. Consequently, few farmers are planting trees on agricultural land or constructing/maintaining terraces, bunds and other soil conservation structures. Although the GoSE introduced legislation seeking to change the traditional *diessa* system, institutional (technical and financial) constraints have delayed its implementation, and in essence stalled the process. In particular, the Department of Lands (DoL) – which is responsible for the implementation of the Land Proclamation⁵ – has insufficient equipment for the mapping and conducting resource availability and quality assessments, which are preconditions for allocating land parcels for different uses. In addition, due to the sensitive nature of land

⁵ 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 incentivize farmers to invest in their land as they can be assured of long-term benefits.

governance, the Government of the State of Eritrea is rolling out implementation of the 1994 Land Proclamation slowly.

- *Limited on-the-ground climate change adaptation interventions:* Currently, there are few CCA interventions being implemented in Eritrea. As a result, the benefits and cost-effectiveness of such interventions has 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 ii) local communities will support and contribute to CCA interventions. Technical protocols for implementing such interventions have not yet been produced because there is limited integration of climate change into natural resource management and ecosystem restoration. Therefore, institutions and ministries responsible for natural resource management and ecosystem restoration have limited access to nationally-appropriate tools or documents to guide them in the implementation of CCA interventions.

No single initiative can remove all of the aforementioned barriers. However, the proposed LDCF-financed project will work in coordination with other water, agriculture and climate change-related initiatives to build on their advances in addressing these barriers. The LDCF-financed project has been developed using the GEF Updated Results-Based Management Framework for the LDCF/SCCF and the Adaptation Monitoring and Assessment Tool (AMAT, GEF/LDCF.SCCF.16/03/Rev.01). The project is therefore aligned with the strategic objectives of the LDCF, namely: 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 climate change adaptation; and iii) Integrate climate change adaptation into relevant policies, plans and associated processes.

The 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 sustainable land, forestry and water resources management 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 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.

The 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 Integrated Water Resources Management (IWRM) Action Plan. By doing so, the LDCF-financed project will also support the implementation of Priorities 3, 4 and 5 of Eritrea's NAPA. The project is in alignment with the following national strategies and plans (detailed review of the national policies, plans and programmes in Annex M – Baseline Study Report).

- The **NFSS** addresses food security at household national levels. The project will support the NFSS by developing and disseminating appropriate, climate-smart technologies that will enhance agricultural production and productivity. In addition, the project will develop climate-resilient land use and area development plans with the local communities, which will promote sustainable land and resource use.
- The **IWRM Action Plan** is aimed at enabling Eritrea to systematically address water management issues. The overall objective of the IWRM Action Plan is to contribute to the implementation of integrated water resources management in Eritrea, which is aligned with government policies, laws and strategies. The project will support the IWRM Action Plan to improve the water resources information database by undertaking comprehensive baseline assessments and monitoring of water resources. In addition, the project will improve: i) the knowledge-base of water-resources; ii) understanding of the existing and projected demands for water; and iii) the capacity of water management institutions to manage both ground- and surface water resources. Information generated 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.

- One of the priorities of the National Programme of Action (NAPA) is to address groundwater recharge in Tsilima, where wells are drying up and groundwater supply for irrigation as well as for livestock and domestic use is limited. In alignment with the NAPA priorities, the project will enhance groundwater recharge and ensure easily accessible water supply through the: i) development of integrated water resources management; ii) implementation of on-farm and off-farm soil and water conservation measures; iii) implementation of groundwater monitoring; iv) contributions to food security and poverty reduction; and v) implementation of a sustainable strategy for coping with climate change. Furthermore, the project will encourage afforestation to facilitate restoration of degraded watersheds, 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 produce sustainable wood, fruit and fodder. Communities will also be assisted in implementing climate-resilient land use planning, ecological and agricultural interventions. And training will be provided to communities on the implementation of such interventions, including integrating tree planning and management in their farming systems through agro-forestry and silvopasture.
- The LDCF-financed project is also aligned with the **First National Communication (FNC)** and the **Second National Communication (SNC)** through: 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. Furthermore, the project addresses several objectives identified within various national policies and strategies related to rural development, poverty alleviation and improved land management.
- The LDCF-financed project is aligned with the **Interim Poverty Reduction Strategy Paper (I-PRSP)** and will support capacity building at the national and sub-national level for government departments, institutions and local communities. The project will therefore contribute to the overall objective of the I-PRSP to reduce poverty in Eritrea by creating favourable conditions for balanced and sustainable economic growth and improve the standard of living of its citizens.
- The LDCF-financed project is also aligned with the **National Action Programme for Eritrea to Combat Desertification and Mitigate the Effects of Drought (NAP)** and will address climate change and land degradation through: 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.
- The **National Biodiversity Strategy and Action Plan (NBSAP)** seeks to ensure the provision of ecosystem goods and services, as well as natural resources through the restoration, conservation and management of Eritrea's biodiversity. The project will support the enhancement of terrestrial biodiversity through the restoration of degraded watersheds and encouraging sustainable land, forestry and water resources management.
- The LDCF-financed project is also in alignment with Eritrea's **Intended Nationally Determined Contributions** which sets out how Eritrea will address climate adaptation and mitigation to reduce their greenhouse gas emissions. The project will contribute towards attaining the following adaptation goals: i) development and establishment of new enclosure areas; ii) promotion of climate-smart agriculture; 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 – crop and livestock–production; and viii) implementation of sustainable land management practices.

The LDCF-financed project will also be aligned with the **Strategic Partnership Cooperation Framework between the Government of Eritrea and the United Nations (2017-2021) (SPCF II)**. In particular, the project will support the following strategic objectives:

- (i) *SPCF Outcome 4: By 2021, environmental and natural resources management is gender responsive, and sustainable, negating the impacts of ecosystem degradation, climate change, and strengthening community resilience to disasters.* This outcome focuses on three main programmatic areas: i) Ecosystem based environmental and natural resources management, ii) Climate change adaptation and mitigation and iii) Disaster risk management (DRM). The LDCF-financed project will support this outcome through enhancing the capacities of the national experts and land users responsible for management, conservation and sustainable use of diverse ecosystems, promoting an integrated approach at the landscape level, embracing ecosystem principles including livelihood objectives in the management of ecosystems, mainstreaming of gender equality and women's empowerment into environmental and natural resources management and strengthening the capacity of national institutions to mainstream climate risk considerations into the management of water resources and food production. The knowledge generated by the 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.

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

II. STRATEGY

The problem that Eritrea is currently facing is that climate change poses a threat to ecosystem services and agricultural productivity in the Tsilima Region by affecting water resources through reduced groundwater recharge. This is a result of decreased precipitation, shorter and more intense rainy seasons which reduce the potential for infiltration and increases run-off, as well as increased temperatures and evaporation. Current land use practices, that don't integrate climate change threats and impacts into resource-use and management decisions compound this problem. The project objective is therefore 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. By doing so, the LDCF-financed project will support the implementation of Priorities 3, 4 and 5 of Eritrea's NAPA – which focus on livestock, forestry and water resources respectively. Furthermore, the project will mitigate the effects of floods and droughts, reduce soil erosion and increase soil fertility. Communities in the Tsilima Region will therefore be less vulnerable to the effects of climate change. The project will achieve this by enhancing the scientific and technical capacity of government staff – at national, Zoba and sub-Zoba levels – as well as academic and research institutions to identify, plan and implement CCA interventions. This will facilitate the implementation of an ecosystem-based approach to CCA, which will be piloted in sub-Zoba Dbarwa. The theory of change adopted for this LDCF-financed project comprises addressing the barriers discussed in Section I while contributing to the preferred solution discussed below through the delivery of an integrated strategy organised in the components.

The preferred solution is to adopt an integrated approach to climate change adaptation (CCA) at the watershed level within Eritrea. Such an approach would: i) increase the availability of natural resources through the restoration of degraded watersheds; and ii) safeguard agricultural productivity under conditions of climate change. Furthermore, an integrated watershed-level approach would address the inter-linked issues of climate change, food security, land degradation and water availability. Institutional changes and activities required to achieve the preferred solution include:

- *Technical and institutional capacity of the national government, Zoba and sub-Zoba administration and local communities is sufficient to address climate change risks:* The preferred solution is to enhance the capacity of GoSE to mainstream climate change considerations into sectoral policy planning and decision-making. In addition, the capacity of local communities, Zoba and sub-Zoba administrations would be strengthened. As a result of the increased capacity and awareness of local- and national-level institutions, climate change risks would be effectively integrated into: i) national sectoral plans and policies; ii) Zoba and sub-Zoba level land use and development planning; and iii) planned activities related to natural resource management.
- *The resilience of rural communities to climate change is increased through improved agricultural productivity and functioning natural ecosystems:* The implementation of an integrated approach to CCA would: i) facilitate a sustainable approach to agricultural intensification and reduce exposure of marginal lands to agricultural expansion; ii) reduce the rate of watershed degradation; and iii) safeguard the productivity of existing agricultural areas and the availability of natural resources at the watershed level. In addition, climate-resilient alternative livelihoods would be identified and supported, diversifying household income and reducing the pressures placed on natural resources by unsustainable livelihood practices.
- *Monitoring and evaluation of adaptation interventions promotes replication and up-scaling:* The preferred solution includes the establishment of a comprehensive system for monitoring and evaluation (M&E) of CCA interventions. The collection of data through systematic M&E would inform an assessment of the effectiveness of such interventions. Data and information would be collated within a centralised platform for dissemination to all relevant government departments and institutions – including NARI and other vocational training institutions – non-governmental organisations (NGOs) and local communities. The collection and dissemination of information based on rigorous scientific research would enable the identification and scaling up of successful CCA interventions as well as support for future interventions in Eritrea. The result would be an efficient national programme coordinating adaptation interventions across Eritrea, supported by a strong framework of knowledge and governance.

National and Local Benefits: LDCF resources have been designed to be used in full alignment with Eritrea's national priorities and identified needs related to CCA. In particular, through its focus on CCA in the mountain ecosystems, LDCF resources will contribute to the national priorities identified under the UNFCCC by addressing sensitivity to climate change risks. The LDCF-financed project will also contribute to addressing broader challenges at the national level, such as water scarcity, food insecurity, land degradation, poverty and vulnerability of Eritreans to climate change in the Tsilima Region. Importantly, LDCF resources will also contribute towards the achievement of Sustainable Development Goals 1, 2, 5, 6, 13 and 15 as outlined under Section 1 (Development Challenge). The emphasis of the project's activities on degraded ecosystems, with a particular focus on upstream river areas, will result in the restoration and improved management of 9,000 hectares of land. Because local communities depend on natural resources for their livelihoods, improved environmental management will reduce poverty and increase food security, thereby contributing to both MDGs and Sustainable Development Goals. Additionally, training communities to rehabilitate and manage ecosystems in a climate-smart manner will increase their resilience to climate shocks as well as improve their livelihoods through greater income-generating opportunities. The project will therefore contribute to reducing poverty in the Tsilima Region.

The project also has specific national benefits. These include improved understanding of the impacts of climate change on the Tsilima Region by sectoral ministries, academic and research institutions, as well as local government. This will be achieved through undertaking groundwater and surface water resource assessments and establishing a groundwater monitoring strategy based on the results thereof. In addition, a climate information and monitoring system will be developed which will inform climate-related research, land-use planning and adaptation interventions. Furthermore, training will strengthen the technical capacity of government staff at local and national levels to analyse, predict and respond to climate change effects, access policy-relevant data and deliver relevant information to local communities.

An additional benefit of the project at the national level will be increased inter-ministerial coordination and institutional capacity to adapt to climate change in Eritrea. The implementation of coordination mechanisms and the development of an information-sharing platform will promote collaboration between ministries as well as research and academic institutions, development partners and national civil society organisations (e.g.; NUEW, NUEYS) that will advance CCA at the national level.

Without the project, local communities and the ecosystems upon which they depend will be increasingly at risk from the impacts of climate change and unsustainable use. Progress towards poverty reduction and socio-economic development will therefore be hampered. The project will provide local government and communities with practical tools, technologies and capacities for an integrated approach to adaptation. Households will be trained to implement CCA interventions. This will be done through practical demonstrations over 9,000 hectares to improve the maintenance and enhancement of ecosystem functioning, integrity and resilience. About 17,000 households (estimated to be 74,625 people) in the Tsilima Region will directly benefit from LDCF resources. It is envisioned that these community members will participate directly in the implementation of the project's activities, particularly those related to agricultural and ecological interventions.

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 difficult for women who are required to spend up to a day – compared to three hours a decade ago – searching for and collecting sufficient quantities of 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 intake⁶. The management of assets and resources by women is a central role of women in Eritrean households and places great stress on them – particularly during droughts⁷. Social factors – including the

⁶ Government of the State of Eritrea. 2006. National Capacity and Needs Self-Assessment (NCSA) for Global Environmental Management in Eritrea.

⁷ 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:

gender divisions in labour and power relations, as well as gender issues in agricultural institutions and culture result in discrimination in rights and access to resources⁸. Although female headed households are important food producers, they are not afforded equal access to resources because of social/cultural views which preclude women from being regarded as equal primary farmers in Eritrea⁹. In addition, thereto, agricultural inputs – such as land, fertilisers, seeds and labour are not readily available and are not easily affordable for female headed households. As key providers in their households, women are intricately involved in environmental protection and are taking the lead in Eritrea. In this context, women are responsible for transmitting value-systems to the upcoming generations. A particular focus of the LDCF project will therefore be on awareness and training of women’s associations, as well as the production of gender-sensitive educational materials. The involvement of the NUEW during project implementation will ensure that gender issues are appropriately addressed and that women and particularly female-headed households are: i) involved in all decision-making processes, particularly on the identification of drought and flood prone areas, development of community-based land use and area development plans and the redistribution of land; ii) encouraged and assisted to get involved in alternative income-generating livelihoods (to be implemented under Component 3) to assist them in securing household food requirements; and iv) mainstream 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 doing so, the LDCF 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 livelihoods activities and 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 also be prepared in the local language and information presented in an easily-accessible form, to ensure that the illiterate, young and old are also included in dissemination of such information. These consultations will ensure that information reaches female stakeholders within their networks and that they also benefit from the best practices and lessons learned during project implementation.

The direct positive effects of the project on improving ecosystem services – such as food production, water quality and availability and wood production – will be enhanced through the application of improved land management practices at a local level. The generation of an enabling and environmentally-informed policy environment will also contribute to the positive effects of the project. Through conserving or improving ecosystem conditions, ecosystem services will be better balanced and threats such as droughts, diseases and pests will be better managed and controlled. Strengthening the livelihood assets on which communities depend – such as rangelands – safeguards household income as households are less prone to – and in a better position to recover from – floods and droughts.

Within the surrounding areas, the project will generate indirect benefits to an estimated ~75,000 people through inter alia: i) reduced vulnerability to extreme weather events such as flooding; ii) improved agricultural productivity through reduced erosion and loss of fertility of soil; and iii) improved quantity and quality of water as a result of ecological interventions. Additionally, the community-based early warning system (EWS) piloted in sub-Zoba Dbarwa will improve the capacity of local communities to respond to such hydro-meteorological events as floods and droughts, and the impacts of these on livelihoods and public health. A functional EWS will also help to prevent loss of life, injuries and damage to property by warning people timeously of impending floods. Furthermore, training of decentralised extension agents from MoA and other relevant local government representatives will promote the replication of EWS in other local communities, further preventing loss of life and damage to property.

Additional national and local benefits are the enhanced capacities in planning and executing projects, undertaking M&E and empowering communities to take charge of their own livelihoods. The immediate benefits of the project will be that government institutions, CBOs and vulnerable communities have increased adaptive capacity as they: i) are more aware of the linkages between climate resilience and ecosystem management; and ii) acquire the necessary skills to apply adaptive approaches. This increased capacity will also support long-term benefits by

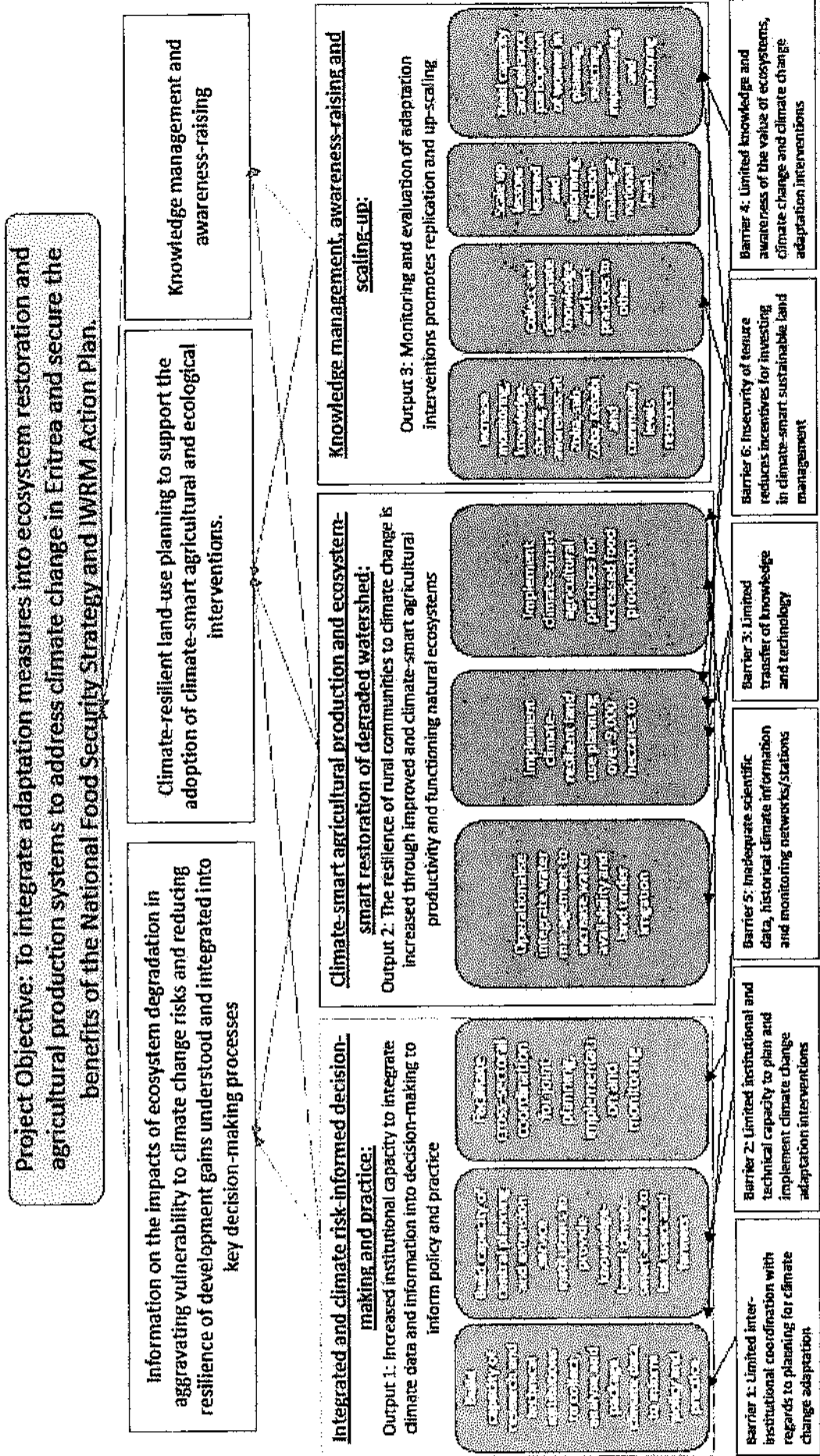
https://www.weadapt.org/system/files_force/yoranos_tesfamariam.pdf?download=1. Accessed on 23 May 2016.

⁸ Ibid.

⁹ State of Eritrea. 2006. National Capacity Needs Self-Assessment (NCSA) for Global Environmental Management in Eritrea.

promoting CCA beyond the project implementation period. The improvement of the knowledge base applicable to the Tsimba Region will result in better decision-making and innovation in terms of agricultural production and an increase in agricultural productivity. In addition, improved knowledge and access to technologies will result in: i) improvement in food security through increased production; ii) reduction in local communities' vulnerability to floods and droughts through more resilient ecosystems and production systems; iii) enhanced adaptive capacity of local communities; and iv) improved service delivery by government and CBOs and national civil society organizations (e.g.; NUEW, NUEYS) institutions through improved skills and knowledge.

Figure 1: Theory of Change



III. RESULTS AND PARTNERSHIPS

i. 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 to inform decision-making by government and other stakeholders, especially farmers. Outcome 1.2 will increase the technical capacity of extension staff to provide knowledge-based advice regarding climate-smart agricultural extension services. Outcome 2.1 will support land use planning processes that integrate climate risk, mainly through participatory mapping of flood and drought prone areas, and to also inform and support land allocation decisions implemented by government under the 1994 Land Proclamation. Outcome 2.2 will improve the availability of water through the implementation of watershed restoration measures and adoption of an integrated water management approach. Outcome 2.3 will enhance agricultural productivity – and ultimately food security – through the implementation of climate-smart agricultural technologies and methods. Outcome 3.1 will increase monitoring and knowledge sharing, as well as public awareness of the impacts and risks of climate change in the Tsilima Region at both Zoba and sub-Zoba levels. Both climate-smart agricultural and integrated water management measures – that reduce the vulnerability of local communities to climate change – will be identified and integrated into the National Food Security Strategy and IWRM Action Plans. These will inform the upscaling of CCA interventions throughout Eritrea.

At the national level, the project will strengthen the climate information and monitoring system through: i) investments in the hydro-meteorological monitoring network; and ii) capacity-building for early warning systems. The 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, the project will increase the resilience of communities living within the Tsilima Region 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 climate-smart agricultural and livestock practices as well as land-use and area development plans. In addition to strengthening the capacity of local communities to adapt to climate change, the interventions will increase household income through the promotion of alternative income-generating activities and the diversification of livelihoods.

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

Total Cost: USD\$ 2,000,000

LDCF project grant requested: \$ 1,750,000; Co-financing (UNDP): \$ 250,000

Without LDCF intervention (baseline):

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 is inadequate number of experienced scientists, research and technical staff within Eritrea. Furthermore, there are few specialised training programmes on climate change. Despite Eritrea's investments in higher education in environmental science, the majority of graduates in Meteorology and Climatology still lack practical experience. Government departments and institutions – including MOLWE, MoA, and NARI – therefore require training and capacity building to support climate-related research and knowledge-based extension services.

The majority of technical staff and extension agents do not have the skills or knowledge necessary 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 advisory packages promoted to farmers are generic, taking minimal cognisance of the differences in environmental and other conditions between the various 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 farmers. 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 within research institutions and the extension services – compounded by the limited availability of information, basic facilities and equipment – is a constraint on agricultural development and growth. Food security in Eritrea, particularly in rain-fed agriculture, requires the reorientation of research and extension services to support smallholders in boosting their agricultural productivity. Moreover, livestock extension services¹⁰ – particularly concerning animal health care – are very limited with the exception of support to intensive management systems. This threatens the health of livestock and ultimately farmers' livelihoods in the Tsilima Region.

With LDCF intervention (adaptation alternative):

The LDCF-financed 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 climate-smart agriculture (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 provision of equipment and training of research staff. Furthermore, the project will identify and increase NARI staff and extension agents' opportunities for exposure, education and experience in climate-related fields of research.

As 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 LDCF-financed project will reorient extension services and research towards addressing climate risks. Based upon 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.

The project will support the MoA's Agricultural Extension Department in revising 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 improved extension services under the LDCF project will therefore be to facilitate a learning process in which farmers – as well as 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 that of teachers to that of facilitators. This will be achieved through: i) establishing networks and linkages with other organisations; ii) continuous revision of extension packages to ensure that they are in line with current research findings and developments in the field of CCA; and iii) training of 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 within the Tsilima Region 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 component 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 both the national and local levels. Consequently, the project will contribute to reducing the vulnerability of local communities in the Tsilima Region within sub-Zoba Dbarwa.

¹⁰ 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 virtually non-functional and vaccination campaigns are incomplete because veterinary drugs are limited.

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, which includes training on climate change and water resources management, as well as research/data collection, analysis and packaging/publication of information.

The LDCF-financed project will support NARI in undertaking comprehensive 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 (see Annex L), and points to significant capacity constraints within NARI (the average score is 2- *Anecdotal evidence of capacity*). This means building NARI's full capacity will require more than this project is able to support due to both time and resource constraints. 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 upon the outcomes of the capacity needs assessment, a short-, medium- and long-term strategy for capacity development and training programs 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:

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

Output 1.1.2: Network and information sharing platform on CCA and climate-smart agriculture (CSA) developed at national, Zoba and sub-Zoba levels.

The LDCF-financed project will enhance coordination and linkages between stakeholders by establishing a network and information sharing platform or forum/committee 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 and community-based organisations (CBOs). The platform will therefore be an intermediary between researchers and decision-makers, translating scientific knowledge into practical guidance for decision-makers and will strengthen climate information generation and dissemination mechanisms. This will be achieved through: i) strengthening of the existing information and communication unit at NARI; ii) revitalisation of the National Food Information System; iii) re-establishment of Farmer Advisory Services; and iv) establishing and/or reinforcing linkages with international institutions working on CSA and climate change related research.

The project will also strengthen NARI's ICU with a focus on documenting local observations of climate change, climate risks and vulnerabilities. The ICU will monitor and document: i) NARI's research studies and findings; ii) the delivery of extension services; and iii) the CCA and climate-smart agricultural measures implemented under this project and other relevant initiatives.

The project will revitalise the National Food Information System (NFIS) at 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) food-relief management; and vi) market transparency. The purpose of the NFIS is to make the Early Warning Food Information System fully operational through undertaking medium- and long-term data collection and analysis. At the Zoba administration level, Zoba Food Information Committees will be established and strengthened to facilitate the development of a community-based EWS under Output 1.1.4.

MoA has established a Farmer Advisory Service (FAS). However; this has not yet been fully implemented because of limited technical capacity and financial resources. The FAS is designed to be a farmer-led, village-based system with extension staff working directly with groups and associations. Through the FAS, extension agents will receive technical advice and support from specialists stationed at MoA branches at sub-Zoba and Zoba level. With extension staff stationed at sub-Zoba level, the Kebabi Administrator as well as Village Agricultural Committees (VAC) and Village Contact Farmers (VCF) will be actively engaged with agricultural extension services. As a result, these stakeholders will be directly involved in the development, implementation, monitoring and evaluation of options for CCA within farming systems. FAS will empower farmers through actively involving them in decision-making, co-financing and co-ownership of adaptation interventions. The success of FAS requires strong linkages between researchers and extension agents and

the establishment of a village data base, which will be enhanced through the active involvement of farmers in the FAS structures at Zoba and sub-Zoba levels. At the village level, VCF and village representatives will be identified to assist in providing advice to farmers and other resource users on innovative approaches to CCA.

Linkages between research institutions and extension services will also be strengthened to engage with extension services, as well as having researchers participate regularly in extension work. Local communities will also play an active role in conducting research at the local level. For example, trials will be conducted on farmers' fields – as demonstration sites – instead of being limited to 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:

- Establish a cross-sectoral committee/forum for dialogue between research institutions, relevant line ministries and extension services, including NARI, MOLWE and MoA within Zoba Debub and sub-Zoba Dbarwa's administration. The platform will be used to: i) share information about past, on-going and planned CCA and natural resource management interventions; ii) coordinate existing climate-smart agricultural practices, soil and water conservation measures; iii) improve the design and alignment of future CCA interventions, sustainable land use and management practices; iv) identify and address the barriers to scaling up successful interventions and approaches within Eritrea; and v) facilitate interactive dialogue with communities to discuss community needs and coordinate service delivery where relevant.
- Organise periodic capacity development and knowledge sharing sessions with staff, local institutions and farmers on effectiveness of CCA interventions, food security, IWRM and climate change, as well as mandate scholars and academics to: i) present study papers, research results and lessons learned; and ii) produce publications that inform policy- and decision-making processes ensuring that climate change is considered.
- Facilitate linkages with international organisations and access to research information by: i) subscribing to written and electronic bulletins published by international research institutions, as well as internet-based research portals; and ii) participating in or attending regional forums, workshops, research internships and exchange visits.
- Provide technical and financial support for the: i) strengthening of the existing information and communication unit at NARI; ii) revitalisation of the NFIS; and iii) re-establishment of FAS. Sub-activities will include:
 - Documentation and dissemination of information by the ICU will be achieved through: i) organising local-level awareness raising campaigns and training programs 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 on CCA and disaster risk reduction; iv) organising periodical capacity development and knowledge sharing sessions with staff, local institutions and farmers on effectiveness of CCA interventions; and v) disseminating tested good practices and lessons learned on CCA.
 - Establish strong linkages and partnerships under the FAS through: i) on-farm trials, field days and demonstrations, as well as participatory surveys; ii) regular meetings to review performance, identify problems, allocate roles and responsibilities, and plan and coordinate the uptake of technology; and iii) identification and selection of VCF and village representatives. The roles and responsibilities of VCF and village representatives are detailed below.
 - VCF will assist extension agents at sub-Zoba level to gather information and assess farmers' needs. They will: i) act as a liaison between extension agents and farmers; ii) assist with the establishment and management of demonstration plots for climate-smart agricultural technologies iii) participate in meetings and discussion groups; and iv) assist in obtaining climate-smart agricultural inputs.
 - Village representatives will assist VCF at Kebebi level to: i) gather information and assess farmers' needs under changing climatic conditions; ii) carry out field demonstrations of climate-smart agricultural technologies; iii) provide information and feedback to VCF on the effectiveness of climate-smart agricultural 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) for conducting research and producing research outputs/products 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.

The LDCF-financed project will support NARI – through MOA, and 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 will also include investigations into technologies, methods for implementing climate-smart agriculture in the Eritrea context, and Tsilima region in particular. The research results will be used to provide knowledge-based advice to farmers and to inform the Ministry of Agriculture’s support to the development of the agricultural sector, and through the extension advice institutions, relay some information to farmers and other land users for uptake and adoption. The knowledge and information will also 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:

- Develop local level research capacity through implementing 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. Potential topics for climate-related agricultural research include:
 - Multidisciplinary research to determine the water balance and water requirement of crops. This will focus on the planning and development of small-scale irrigation projects, as well as sustainable agricultural water use and management methods and technologies.
 - Development of drought-resistant and short-maturing crops for rain-fed agriculture.
 - Conservation agriculture practices, including tillage management and soil fertility.
 - Watershed restoration.
 - Agroforestry and silvopasture.
 - Improved livestock productivity, rangeland development and grazing management.
 - Post-harvest handling, storage and processing techniques and methods.
 - Timber and non-timber forest products.
- Facilitate the production and publication of research reports in an accessible form, including as policy briefs.

Output 1.1.4: Climate information and monitoring systems developed in association with relevant line ministries, departments – in particular, the Meteorological Services Unit – and local communities based upon data received from hydro-meteorological stations installed under Output 2.2.2.

The LDCF-financed project will develop a national climate information and monitoring system which 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 impacts of climate change. This will include observing, measuring, predicting or forecasting floods and droughts based upon 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 Region through the development of a community-based EWS.

Data from the national climate information and monitoring system will be collected by various stakeholders and analysed by the MSU, which is responsible for transmitting warnings to the local communities via the extension services, radio and other means of communication. The provision of seasonal forecasts and early warnings will allow farmers to make informed decisions based upon the data collected and analysed. These will include the location and selection of *inter alia*: i) climate-smart agricultural 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 Kebeles of sub-Zoba Dbarwa to reduce the vulnerability of the local communities therein. Priority climate and related risks will be identified through a synthesis of community observations, traditional knowledge and scientific information – including the flood and drought prone area

maps to be developed under Output 2.1.1. Subsequently, existing livelihood maps for sub-Zoba Dbarwa will be updated through a community-based planning exercise.

The 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 vulnerable to climate change and disasters will be identified and the EWS will track key variables at the village level, such as water availability, livestock condition, and fodder availability, incidents of conflict and health trends, including 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 cross-sectoral platforms to be established by the project and as part of the climate information and monitoring system. MoLWE and UNDP will work closely with the NUEW, Ministry of Health and the World Health Organisation to particularly monitor health-related information and the potential health-related impacts that may result from the project activities, in particular a potential increase in vector-borne diseases such as malaria and dengue fever that may result from increased availability of surface water (e.g. in dams). Based upon the information generated, activities will be developed to address priority needs and strengthen traditional coping mechanisms.

Indicative activities under Output 1.1.4 include:

- Develop and implement a capacity development program for the MSU to address gaps in skills, training, equipment and facilities.
- Provide training on meteorological observation and analysis to the MSU, other institutions and stakeholders involved in the collection and gathering of meteorological data. In particular, community members will be trained in household data collection.
- Provide technical and financial support to the MSU and other stakeholders to facilitate the establishment of a community-based EWS in sub-Zoba Dbarwa. This will include:
 - Initiating a community-based planning exercise to design an EWS, using a sustainable livelihoods approach to update and expand existing livelihoods maps for sub-Zoba Dbarwa and to clarify priority climate and related risks.
 - Collate and synthesise community observations, traditional knowledge and scientific information – including the flood and drought prone area maps to be developed under Output 2.2 – 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 within institutions involved in extension services on inter alia sustainable land, forestry and water resources management.

A rapid capacity assessment was conducted for the Agricultural Extension Department of the Ministry of Agriculture (see Annex K) and it indicated little to no capacity for provision of climate-smart advice (the average score is 1 - No evidence of capacity). Significant investments therefore need to be made to get 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. The LDCF-financed project will address aspects of the identified capacity gaps through providing technical support to extension officers at the Zoba and sub-Zoba level for 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 capacity building program 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 upon 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 and climate-smart approaches for the design and implementation of both ecological and agricultural interventions will also be included in the training. Furthermore, 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:

- Conduct a needs assessment for CCA training. This will be initiated and coordinated by MoLWE and MoA. The needs assessment will include: i) a stock-taking exercise to identify existing training materials on CCA in Eritrea; and ii) an assessment of the types of training required to build Zoba and sub-Zoba capacities.
- Provide financial and technical support including equipment and facilities identified as limited within the capacity and resources assessment. Examples of equipment that may be required include computers and associated software, audio-visual equipment, GPS equipment, topographic survey equipment and software. The technical support will include enhanced internet connectivity and communications, 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 climate-smart approaches through the provision of technical and financial support at national, Zoba, sub-Zoba and Keqabi levels.

The LDCF-financed project will assist the GoSE to review and update extension packages, as well as 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 within the resource constraints of government, as well as respond to the needs of smallholders and vulnerable communities. The revised extension packages will be facilitated by the development of Farmer Advisory Services under Output 1.1.2, which will promote an integrated crop and livestock service and introduce use of contact farmers to alleviate pressure upon extension agents.

Extension agents will receive training on up-to-date methods for natural resource management focusing on agricultural and ecological interventions. The agricultural interventions will include: i) climate-smart agricultural 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. Training will also be provided to extension agents, as well as relevant stakeholders who will be involved in the implementation of the project on CCA. The Agricultural and Land Division's capacity to disseminate and implement improved technologies – integrating climate risks and sustainable water resources management – will also be enhanced through on-the-job training.

Indicative activities under Output 1.2.2 include:

- Review and update the extension services package to include aspects that are not covered within 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 socio-economic conditions; iii) environmental considerations; and iv) the needs of local communities.
- Train extension agents on the revised extension packages, which will support the transition towards CSA and establish an effective working link with farmers.
- Develop a strategy to build technical capacity of MoA's Agricultural Extension Department to enable development and transfer of climate-smart agricultural technologies and livestock production practices.
- Develop manuals and leaflets as reference materials and guidelines on agricultural and ecological interventions, as well as methods for monitoring the effectiveness thereof. These documents will be produced on an annual basis and distributed amongst extension agents.

Output 1.2.3: A long-term strategy developed and implemented for monitoring and evaluating climate-smart: i) water resources use and management; ii) crop productivity; and iii) livestock productivity

Participatory monitoring and evaluation (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 the project and 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. Training will be provided to community members on low-cost, user-friendly biophysical indicators and rural appraisal tools to measure the impacts of project interventions, including use of water resources, as well as the effectiveness of agricultural and livestock practices.

Indicative activities under Output 1.2.3 include:

- Develop an M&E methodology in pilot areas taking into consideration biophysical and socio-economic indicators and develop performance targets for project interventions.
- Train the community members, extension agents, NARI technical staff on the M&E methods and techniques, as well as indicators.
- 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 Two: Climate-resilient land-use planning to support the adoption of climate-smart agricultural and ecological interventions.

Total Cost: USD\$ 9,105,000

LDCF project grant requested: \$ 7,055,000; Co-financing (UNDP): \$ 2,050,000

Without LDCF intervention (baseline):

Land within the Tsilima Region 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 to build up and maintain soil fertility are not fully being implemented by farmers. To reverse this situation and to promote or assure initiative and motivation among beneficiaries and producers, the government has embarked on addressing the problem by 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 level does not adequately integrate climate change considerations. The redistribution of land and long-term investments in agricultural land will therefore subsequently 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 ecosystems themselves. The agricultural productivity of land and the effectiveness of soil and water conservation measures may therefore be undermined by the predicted effects of climate change, especially an increase in droughts and floods.

The availability of water, or lack thereof, constrains the agricultural productivity of land in the Tsilima Region. Groundwater is the most dependable source of water in Eritrea. However, despite sufficient WRD regulations, digging and drilling of wells is often unregulated due to inadequate enforcement and the continuous pumping of water from these sources has led to a decline in water levels as observed in the Tsilima Plains and upper catchment area. The Water Resources Department (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 discharge 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 is not taking place.

Inadequate knowledge regarding 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 blocked with sediment deposits. These deposits reduce the amount of water that can be diverted and the overflow contributes to surface flow and subsequently soil erosion. In addition, the dimensions of earth embankments and bunds are insufficient for the retention of 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 intervention (adaptation alternative):

The LDCF-financed project will undertake climate-resilient land use planning over 9,000 hectares of land in the Tsilima Region 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 by the Food Security Strategy and IWRM action plan in the agriculture and water sectors. The envisaged interventions will include *inter alia*: i) physical infrastructure to optimize the ability of riverbanks and beds to increase infiltration and for harvesting excess water during flash floods; and ii) adoption of climate smart-agricultural and livestock production practices under Outcomes 2.2 and 2.3.

Under this outcome, the 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 climate-smart agricultural technologies. The efficient, equitable and sustainable management of water resources is generally only possible at the watershed level combined with farm/household level management practices. Under Outcome 2.2, the project will support the implementation of ecological interventions through a watershed restoration programme covering over 9,000 hectares within the Tsilima Region. The ecological interventions will be aligned with the community-based land-use and area development plans and will reduce watershed degradation through the implementation of *inter alia* 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 storing 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, the project will increase food security through the implementation of agricultural interventions that are climate-smart. In addition, the project will provide support to the diversification of livelihoods by identifying and supporting alternative income-generating activities. The extension services – capacitated under Component 1 – will support the development and transfer to farmers of a range of CSA and livestock production practices, as well as alternative income-generating activities, including: i) drought and disease-resistant varieties; ii) integrated crop-livestock production systems; iii) conservation agriculture; iv) agroforestry; and v) rangeland management focusing on conserving native fodder and crop species and varieties, enabling them to be used by small-scale farmers.

The 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) socio-economic benefits to residents of the Tsilima Region; and iv) community-based land use planning and development.

Outcome 2.1: Climate-resilient land use planning implemented over 9,000 hectares of the Tsilima Region.

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.

The LDCF-financed 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 Kebabi Administration Areas (KAA) within the project area. Climate-risk information and vulnerability and risk perception will inform decision-making on land-use planning and climate-smart agricultural 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, in order to better inform planning. At a socio-economic level, a Vulnerability and Risk Assessment (VRA) will be conducted to gauge both awareness of climate change impacts, as well as the perceptions of communities and land users about their vulnerability towards the risks imposed by climate change and variability.

Based upon the information and maps generated through water assessments (Output 2.2.1), land capability and soil surveys (Output 2.1.4), as well as vulnerability and risk assessments, community-based land use and area development plans will be developed for each of the KAA. 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 is recommended to encourage community participation in drafting the plans.

Indicative activities under Output 2.1.1 include:

- Generate maps identifying flood and drought prone areas under climate change conditions which pose a threat to the livelihoods of local communities in the KAA – based upon the improved hydrological and meteorological data and assessments under Outcome 2.2.
- Conduct a comprehensive Vulnerability and Risk Assessment as per the guidance and methodology indicated in Annex P (A Guide to the Vulnerability Reduction Assessment)¹¹.
- Provide technical and financial support to undertake land capability classification, including a soil survey and soil chemical analyses.

¹¹ Andrew Crane Drosch, Nickey //Gaseb, Pradeep Kurukulasturiya, 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.*

- Engage with sub-Zoba administration, KAA, 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 Village Agricultural Committees, Water User Associations and Farmers' Associations to coordinate local level participation in climate change adaptation, land use and development planning.

The LDCF-financed 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 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, Water User Associations and Farmers Associations to improve their technical capacities for natural resource management.

The strengthening of local institutions will include the 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 – watershed level. Furthermore, this process will ensure that the activities of adjacent communities do not have an adverse effect upon other communities' natural resources, including land, forestry 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:

- Provide financial and technical support for the strengthening/establishment of CBOs including VAC, Water User Associations, Farmers Associations and Land Use Committees at local level.
- Review existing policy and institutional framework and implement community by-laws for sustainable land, forestry and water resources management.
- Hold training workshops including exchange experiences and meetings wherein stakeholders will be able to exchange ideas and discuss common problems.
- Create a forum for discussions between CBOs of neighbouring KAA.

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

The LDCF-financed 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 within the project area will inform the formulation of land-use and area development plans (under Output 2.1.1). Under this output, the project will also provide assistance to the mapping of land and 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 of 1994 whose objective is to redistribute/allocate permanent land parcels to citizens and replace the current diessa system, and therefore increase land tenure security for households. Land allocation decisions are meant to be based on resource quality and availability, in particular soil and water. Traditionally redistribution and allocation of land is usually carried out by a committee of village elders elected by the village (baito). These committees generally apply traditional soil classification schemes to categorize available arable land into different groups (Subuh-fertile; Maekelai-medium; and Rekik-marginal/unfertile).

The new land policy (1994 Land Proclamation) is aimed at eliminating periodic redistribution, curtailing land disputes, increasing duration of the land rights and enhancing exclusivity and transferability rights. These measures are meant to provide land cultivators with more secure land rights, which ultimately will contribute in boosting long-term investment, improved land husbandry and better environmental conservation. This new land law will permit the classification and allocation of land on a more rational and scientific basis, avoiding fragmentation, and ensuring the establishment of appropriately-sized reserves for woodlots, grazing, and communal, housing and urban facilities. The mapping and resource assessments to be conducted under the project will therefore contribute to informing the land allocation process by providing scientific data on location of resources (e.g. groundwater, forests) and their quality.

Indicative activities under Output 2.1.3 include:

- Assess availability and quality of resources through *inter alia* land capability classifications and soil surveys.
- Identify and classify individual parcels of land according to results of assessments.

- Undertake GIS mapping and plot coordinates for the demarcation of land uses.
- Hold 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 Region, 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 LDCF-financed project will support the WRD in undertaking comprehensive baseline assessments and monitoring of water resources. Rates of surface and ground water abstraction are currently not informed by scientific data on rates of replenishment, contributing to over-abstraction and the depletion of groundwater resources in Eritrea, particularly in the highlands. The project will improve: i) the knowledge base of water resources; ii) understanding of the existing and projected demands for water; and iii) the capacity of water management institutions to manage ground- and surface water resources. Information generated 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. The project's activities will subsequently increase the returns on irrigation investments financed through the food security programme implemented under the auspices of the Food Security Strategy.

Indicative activities under Output 2.2.1 include:

- 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, domestic and livestock.
- Develop comprehensive water development and management plans based upon the ground and surface water resources assessment.
- Purchase and installation of 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.
- 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.
- Review IWRM Action Plan to incorporate responses to climate change impacts on the water sector.
- Provide technical support to strengthen WRD's water resources information database and management system. This will include basic data collection, as well as processing, analysing and disseminating information.
- Develop water management tools and guidelines for dissemination by WRD to decision-makers and local communities.
- Provide 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 and Halhale.

Under this output, the LDCF-financed project will facilitate the refurbishment and establishment of hydro-meteorological stations to enable the gathering of climate information – including precipitation and temperature – and monitoring of seasonal and inter-annual variations in climate. In particular, 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 institutions. It will be recorded and transmitted to the MSU 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 may occur and the intensity thereof; and ii) inform land-use planning and the 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:

- Purchase and installation of new hydro-meteorological stations including: i) a Class 1 meteorological station at Mendefera; and ii) three Class 3 meteorological stations within the upper catchment.
- Refurbish the existing Class 1 meteorological station at Halhale research station.

- Establish an appropriate communication system to transmit: i) hydro-meteorological information to the MSU; and ii) transfer early warnings from the MSU to relevant Kebebi administration within sub-Zoba Dbarwa, including on weather forecasts and predictions as well as seasonal forecasts that will be useful for informing preparedness for outbreaks of floods and droughts as well as the incidences of vector-borne diseases such as malaria and dengue fever, which is now on the rise in the Eritrean highlands.
- Provide training for technical staff from NARI, extension agents and other relevant institutions, as well as selected community members on data collection and record keeping.
- Provide training to MSU 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 LDCF-financed 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 river bank treatments will increase groundwater recharge and the amount of water available for irrigation. The restoration of degraded watersheds will be supported through the provision of materials and equipment necessary for implementing flood control, water storage and runoff reduction measures.

The list of potential watershed restoration and management measures to be implemented will be developed with explicit consideration of the local socio-economic 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 as well as the height and width of earth embankments will be designed in accordance with the 50-100 years flood levels. In addition, these measures may include sediment-excluding facilities to handle the potential increase in debris as a result of climate change.

Natural regeneration activities – particularly enrichment planting to introduce 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 provision of ecosystem goods and services under climate change conditions, such as species that are drought- or flood-resilient; and iii) 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 in order to establish an ecosystem that is both climate-resilient and provides additional livelihood benefits. The project will propagate local agroforestry species including *Faidherbia albida*, *Rhamnus prinoides* (Gesso), *Opuntia ficus-indica* (Cactus pear), *Moringa oleifera*, *Leucaena leucocephala* (Licina), *Acacia mearnsii* and *Senegalia polyacantha*. Sites for implementing agroforestry will be identified based upon consultations with local communities with a focus on villages with: i) small farmlands; ii) small grazing lands; and iii) a large number of women headed households. During the PPG phase, the following KAAs were identified as likely places suitable for implementation within the Tsilima Plain: i) Adi Geda; ii) Adi Bazehannes; iii) Amadir; iv) Teraemni; v) Temajilan; vi) Adbzage; and vii) Adi Iogo. KAAs identified within the upper catchment area include: i) Gerteti; ii) Kisad Daero; iii) Adiketekula; iv) Dektusnea; and v) Zawle.

Indicative activities under Output 2.2.3 include:

- Provide financial and technical support to WRD to develop and pilot integrated water management practices within the Tsilima Region. This will include the following sub-activities.
 - Undertaking site investigations and hydrological analysis of potential locations for the implementation of integrated water management, soil and water conservation measures. This will include undertaking comprehensive EIAs for the construction of soil and water conservation measures, particularly sub-surface dams.
 - Implementing approximately six water diversion schemes over 240 hectares of land in the upper catchments of Hailhale, Mereb and Mao Megoso rivers.
 - Harvesting floodwater to enable irrigation of ~60 hectares of rain-fed cereal production and rangelands in selected KAA.
 - Constructing two sub-surface dams which are able to retain ~600 000 m³ 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; ii) Adi Harbo in Amadir KAA; and iii) Adi Bana in Kisad Dearo KAA.

- Promote rainwater harvesting by treating land surfaces to decrease infiltration and make runoff available for irrigation and other uses. The runoff will be stored in a reservoir to supply water in small fields, whilst ditches will be used to harvest rainwater from hillsides or gentle slopes where the soil permeability is slow.
- Develop and implement soil and water conservation measures over 9,000 hectares of land within the Tsilima Region, including *inter alia*: i) hillside terracing; ii) establishing 300 hectares of new enclosure areas and maintaining 200 existing permanent and seasonal enclosures; iii) planting of 1.4 million indigenous and multi-purpose trees over an area covering 1,200 hectares of degraded land in the western mountain ranges of the upper catchment area; and iv) incorporation of multi-purpose trees in household woodlots and community enclosures.
- Promote natural regeneration and reforestation of degraded watersheds through, *inter alia*: i) promoting agroforestry by planting ~35,000 seedlings on 600 hectares of farmland – 450 hectares in the Tsilima Plain and 150 hectares 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.
- Establish and/or upgrade existing forestry nursery sites within sub-Zoba Dbarwa and NARI. These nurseries will produce a variety of tree seedlings – including multi-purpose trees – for planting in enclosures, farms, backyards and roadsides of villages.
- 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 trained to undertake sustainable water use and management, including inter alia water harvesting, construction and maintenance of hard and soft engineering interventions.

The LDCF-financed project will provide training to technical staff, extension agents and local communities on the implementation of sustainable water-use and management interventions. The training will be based upon 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:

- Provide training to technical staff from the WRD and MoA – at Zoba and sub-Zoba levels on adaptation techniques and approaches that are 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 rain-fed systems and water-efficient technologies to harvest water; iv) the modification of cropping calendars; and v) the efficient use and management of water resources for irrigation.
- Hold 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.
- Develop manuals on operation and maintenance of hard and soft engineering interventions, including flood control measures, water harvesting interventions, and soil and water conservation measures.

Outcome 2.3: Increased food production through the implementation of climate-smart agricultural practices across the Tsilima Region.

Output 2.3.1: Climate-smart agricultural practices – informed by research products 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 production systems; iii) conservation agriculture; iv) agroforestry; v) silvopasture; and vi) rangeland and livestock management.

The LDCF-financed project will implement CSA practices in the Tsilima Region 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. Furthermore, 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 of trees and shrubs that will increase soil moisture and soil organic matter while also diminishing the effects of heavy rains, droughts and wind storms under climate change conditions. By incorporating fodder trees

within crop fields, the project will increase the availability of fodder for livestock and reduce the dependence on degraded rangelands. Economically important shrubs such as *Rhamnus prinoides* (Gesso) and legume trees with pods will also be grown. Such species include *Acacia senegal*, *Vachellia tortilis* and *Faidherbia albida*. The promotion of agroforestry within 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 Region to climate change.

The LDCF-financed project will also provide training to local communities on the implementation of climate-smart agricultural technologies and livestock production practices. A participatory approach to training will be adopted, facilitating learning through *inter alia* organising farmer-farmer exchange visits, as well as visits to demonstration plots (which will be established under Output 2.3.1).

Indicative activities under Output 2.3.1 include:

- Identify and implement a range of climate-smart agricultural technologies and methods within 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 hectares of grazing land – including 720 hectares in the upper catchment area and 275 hectares 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 reseeded of grasses to promote rangeland productivity.
- Establish demonstration plots at each of the project intervention sites to demonstrate climate-smart agricultural technologies and methods. Organise experience-sharing events where farmers and community members from nearby villages are brought to the demonstration plots.
- Train extension agents and CBOs to oversee and coordinate local community involvement in the implementation of CCA interventions and climate-smart agricultural technologies and livestock production practices.
- Train local communities on the implementation and maintenance of CSA technologies and livestock production practices.

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 Ministry of Agriculture to improve livelihood diversification among households in Eritrea, including the Tsilima region. The agricultural support packages provided by the government 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 milk products, both nationally and community and household levels, the MoA is supporting selected farmers to integrate dairy production into their livestock production systems. These farmers are also encouraged and supported to produce their own forage for feeding their cattle. Technical support is also provided by the government on improved dairy cattle management and cattle health management.
- **Small-stock production** – The MoA also supports the production of goats and sheep for meat and other products, and as an income-generation opportunity for households. Small stock is particularly viewed as 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 to also promote access to meat protein and other meat products.
- **Poultry production** – The MoA also has a scheme through which it distributes chicks to households, mostly women-headed. The poultry has benefited a significant number of households in the Tsilima region. Through this scheme, egg and poultry meat production have become important income generation activities, and have also increased household food security and improved nutrition.
- **Bee-keeping for honey production** – Honey production in Eritrea is one of the popular livelihood activities in Eritrea. It is seen in the highlands of the country as one of the least cost investment income-generating activities for resource-poor farmers including women, youth and the unemployed sectors of the community. The Tsilima region is regarded as suitable for honey production. It is a highly valued agricultural product and for this reason, the MoA is supporting farmers by supplying apiculture equipment/facilities such as improved beehives, honey processing gears.

Through the LDCF project, and in collaboration with the MoA, support to these agricultural packages, as well as additional off-farm income generating opportunities will be identified for creating off-farm employment and diversifying traditional livelihood practices based upon the climate-related research undertaken in Output 1.1.3. Particular focus will be paid towards the processing of

agricultural products and development of improved agricultural value chains. Products such as honey have a 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 female-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 resilience of the agricultural sector and that of farming households and communities.

Indicative activities under Output 2.3.2 include:

- Conduct assessment in order to identify actual beneficiaries of alternative income-generating livelihoods.
- Identify and implement appropriate and specific income generating activities.
- Provide technical and financial support for the identification and implementation of selected income-generating activities in addition to the ones supported by the government. 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 into household's tree plots such as *Rhamnus prinoides* (Gesso), acacia and other fruit trees; iii) promotion of beekeeping; and iv) promotion of small stock.
- Training of community members on value-addition activities, including agro-processing and marketing skills.
- Support for access to markets within and outside the Tsilima region.

Component Three: Knowledge management and awareness-raising

Total Cost: USD\$ 250,000

LDCF project grant requested: \$ 200,000; Co-financing (UNDP): \$ 50,000

Without LDCF intervention (baseline):

The NCSA recognises that there is insufficient capacity within 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 natural resource management. Consequently, there is limited availability of baseline data and little sharing of such information within Eritrea.

There is a low level of understanding within local communities regarding the predicted impacts of climate change in Eritrea and potential benefits of CCA interventions in reducing those negative impacts. The scarcity of awareness materials and poor integration of environmental matters into formal education programs and curricula limits public understanding of the dynamics shaping ecosystems and results in weak responses to environmental challenges affecting people and their livelihoods. This is exacerbated by low level of literacy among farmers, making it difficult to disseminate useful information to rural communities using conventional information, education and communication materials.

There is limited generation and systematic sharing of knowledge on CCA and natural resource management, which can inform community livelihood practices. For example, the impacts of unsustainable land-use practices are not well understood by farmers. As a result, these unsustainable practices continue, posing further threats to the resilience of ecosystems and their ability to continue to provide goods and services to society. This further decreases the resilience of communities' livelihoods against the impacts of climate change. Currently, there are no communication or outreach strategies providing information to stakeholders such as extension agents and farmers. Insufficient information and public awareness are major challenges affecting 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, nor are the potential benefits of adopting sustainable measures appreciated by government 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. Furthermore, 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 intervention (adaptation alternative):

Knowledge and information exchange and joint learning is integral to the successful development, implementation and scaling up of CCA interventions throughout Eritrea. The LDCF-financed 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 doing so, the project will contribute towards an informed and knowledgeable public and this will further facilitate the creation and skills to systematically address the impacts of climate change at all levels of society and economy. 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 upon various media including print and radio productions, public fora/meetings to disseminate information to the public.

The project will adopt a versatile approach to disseminate knowledge of climate-smart agricultural 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 needs of vulnerable groups – in particular female-headed households and illiterate farmers – will be identified and incorporated into the awareness-raising programmes.

The 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 integrated water resources management.

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) climate-smart agricultural technologies and measures; and iv) the sustainable use and management of natural resources.

Output 3.1.1: Public awareness-raising and education campaigns conducted in the Tsilima Region using all forms of media (including inter alia print, radio, art and drama)

The LDCF-financed project will implement awareness-raising measures to increase the understanding of Eritrean communities on the effects of climate change and potential CCA interventions. Awareness-raising initiatives will use local media, drama productions and community radio networks to assist in the broadcasting of adaptation advice such as: i) a cropping calendar of sowing, planting and harvesting times; ii) climate-smart agricultural practices, including drought-resistant varieties of local crops, suitable seed provision and mulch application; and iii) water-efficient irrigation technologies. Conventional extension methodologies will be improved with the adoption of a “learning-by-doing” approach that introduces participatory experiential learning methods. For example, exchange visits between communities of different Kebabis and demonstration sites will expose farmers to successful practices that have been implemented elsewhere. Climate-resilient land-use and area development plans (see Outcome 2.1) and practices will potentially be revised in accordance with lessons learned via exchange visits. Youth and school groups will also participate in implementing CCA interventions. This will be undertaken through field days and study tours, as well as school projects and youth competitions. Lessons learned from the project will be made available for inclusion into educational curricula. Finally, best practice guides for CCA will be published in local languages to support the widespread adoption of the interventions promoted by the project.

Indicative activities for Output 3.1.1 include:

- Conduct a public awareness campaign using local media to inform communities on the effects of climate change and benefits of appropriate CCA interventions. The campaign should include the development and dissemination of easily comprehensible, user-friendly literature on CCA and monitoring of CCA interventions as well as watershed restoration sustainable water use and management techniques for use by CBOs and local communities. These knowledge products will provide guidance on how to develop and implement watershed restoration and management practices, climate-resilient land use and area development plans as well as climate-smart agricultural practices.
- Organise local-level awareness-raising campaigns and training programs for farmers on lessons learned and best practices. Adopt experiential learning methods including demonstration plots, farmer-farmer exchanges, field visits and study tours to publicise project activities and lessons learned from implementation experience. These field visits will include school and youth groups who will be encouraged to participate in various activities and competitions.
- Establish an education programme in local schools on the benefits of CCA interventions, including climate-smart agricultural technologies, livestock production practices and alternative income-generating activities.

- Provide support to the development and broadcast of farmer radio shows that provide easily accessible and useful agricultural and weather-related information to rural households.

Output 3.1.2: A communication strategy developed and implemented to collect and disseminate knowledge and best practices on: i) climate- and ecosystem-smart watershed restoration; ii) climate-smart agriculture; iii) sustainable land management; and iv) natural resource use.

The LDCF-financed project will develop and implement a communication strategy to raise awareness on the benefits and opportunities offered by CCA interventions. The strategy will be developed for use by national, Zoba and sub-Zoba administration, including extension agents. This approach will be underpinned by the collation of: i) best practice information; and ii) lessons learned during project implementation.

Under this output, the research and knowledge products generated by the project's activities, including lessons learned and best practices will be made publicly available in an easily digestible form to support other ongoing and future CCA interventions. The project will collect knowledge on the effectiveness of the CCA interventions implemented in each of the selected KAA. Experience-sharing programs – combining workshops and visits to model farming systems, networking and distribution of training manuals and relevant literature – will be promoted by responsible institutions. In addition, frequent joint field visits and community consultations by policy-makers, National Steering Committee and Project Technical Committee will be undertaken. These interactions will raise awareness and acceptance among policy-makers for the smooth implementation of the project activities, as well promote up-take and up-scaling and replication elsewhere in Eritrea.

In addition, the project will rely upon the information-sharing platform – established under Outcome 1.1 – for the wide scale dissemination of information and lessons generated from the project interventions nationally. The UNDP's Adaptation Learning Mechanism (ALM), wikiADAPT will be used to disseminate information globally.

Indicative activities for Output 3.1.2 include:

- Facilitate community consultations with policy-makers, the National Steering Committee and Project Technical Committee.
- Collate and synthesise lessons learned and best practices from project results, including the benefits of adaptation interventions. Best practices and lessons learned to be disseminated: i) nationally through the information-sharing platform; and ii) globally via the UNDP's Adaptation Learning Mechanism (ALM) and wikiADAPT, as well as the Global Adaptation Network (GAN) and the Africa Adaptation Knowledge Network (AAKN).

Output 3.1.3: A strategy developed and implemented for: i) scaling up lessons learned to other Zobas, sub-Zobas and Kebabis; and ii) informing decision-making at national level.

The LDCF-financed project will develop a strategy for scaling up lessons learned during project implementation to other sub-Zobas and Zobas. Lessons learned and best practices will be shared through the information sharing platforms developed under Outcome 1.1 to: i) inform policy- and decision-making on a national level; and ii) influence the implementation of the baseline programmes in other parts of the country. The strengthened extension services, exchange and field visits will facilitate the replication and scaling up of the project activities elsewhere in Zoba Debub and throughout Eritrea.

Indicative activities under Output 3.1.3 include:

- Develop and implement a strategy for scaling up and replicating project activities and lessons learned throughout Eritrea.
- Establish a good practice database, including traditional and project activities.
- Organise a regional forum to review and integrate CCA interventions into the regional development plan, Food Security Strategy and IWRM action plans.

Output 3.1.4: A gender strategy developed and implemented, which includes capacity building and enhancing the participation of women in planning, selecting, implementing adaptation measures and monitoring their success.

The LDCF-financed project's activities will respond to the anticipated effects of climate change on women and recognize the gender-differentiated impacts of climate change on men and women and their households. A particular focus of the gender strategy will be on awareness and training of women's associations and the production of gender-sensitive education materials. This approach will promote local community support and ownership of the project activities. Women and female-headed households in the Tsilima

Region will directly benefit from the project through an increased capacity for CCA, as well as increased community coordination and ownership.

Indicative activities under Output 3.1.4 include:

- Update and extend the portfolio of training modules to include gender aspects associated with climate change that are not covered within the current portfolio. The training programmes will be tailored to the local context with respect to the needs of women.
- Collaborate with the NUEW to ensure that women's needs and interests are represented in the: i) preparation of land use and area development plans; ii) strengthening and/or establishment of CBOs; and iii) development of community bylaws, under Outcome 2.1.
- Create a discussion forum to facilitate dialogue on gender issues between the CBOs, Kebabi and sub-Zoba administration.
- Develop a gender strategy to strengthen the adaptive capacity of women to prepare for the adverse effects of climate change.
- Document lessons learned on the experiences and coping strategies of women and men and the implications for future project and program design.

ii. **Partnerships:** Few GEF and non-GEF funded projects that focus on adaptation to climate change or sustainable land, forestry and water resources management are currently being implemented in Eritrea. Over the last decade, 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 ~305,000 hectares of land in enclosures throughout Eritrea. In conjunction with ongoing GEF and non-GEF funded projects, these initiatives provide opportunities for synergies and knowledge exchange with the LDCF-financed project. The Project Coordination Unit will coordinate efforts and establish linkages with other ongoing initiatives in the Tsilima region and elsewhere in Eritrea. The following initiatives are ongoing through the support of other organisations/agencies:

- The IFAD project addressing land degradation challenges, entitled 'Strategic Investment Program on Catchments and Landscape Management', is currently being implemented in Eritrea. The objective of the project is to address the interlinked problems of poverty, food insecurity, land degradation and the loss of biodiversity. This will be achieved through the development and promotion of innovative sustainable land management technologies and land use planning approaches with the aim of restoring, sustaining and enhancing the production and protection functions of Eritrea's ecosystems. The adoption of a systematic, community-based, catchment and landscape planning and management process which specifically targets the needs of the rural poor is integral to the sustainable management of land within Eritrea. The LDCF project will build upon the lessons learned through this project.
- UNDP is currently implementing the Strategic Investment Program on Sustainable Land Management – Pilot Project in Serejeka sub-Zoba of the Makael Zoba. The project focuses on addressing land degradation through the creation of an enabling environment necessary for the adoption of sustainable land management practices, as well as alleviating environmental degradation while improving livelihoods of the farming communities of the Central Highlands Zone. This is undertaken through the piloting of SLM approaches in 15 villages over an area of 140,000 hectares. The proposed LDCF-financed project will coordinate closely with this project to ensure reduced duplication and increased complementarity.
- 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 98 million seedlings have been planted and ~40,000 hectares of degraded land rehabilitated. Between 2010 and 2014 alone, more than 18 million seedlings were planted and 7,230 hectares of plantation established. In addition, the GoSE has identified ~72,000 hectares for further reforestation. The LDCF 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 that there is increased complementarity and no duplication.
- The African Development Bank has recently launched (early 2016) a \$1.4m project on 'Drought Resilience and Sustainable Programme in the Horn of Africa'. The proposed LDCF-financed project will coordinate closely with the project to ensure reduced duplication and increased complementarity.

The project will also coordinate and share learning and experiences with the following Adaptation Fund and GEF-financed projects:

- The project will also collaborate with the Adaptation Fund project entitled Climate Change Adaptation Programme in Water and Agriculture in Anseba Region, Eritrea (UNDP PIMS 4540), which is addressing climate change adaptation issues within the Anseba region in Hamelmalo and Habero Sub-Zobas. The Adaptation Fund project is focused on increasing community

resilience and adaptive capacity to climate change through an integrated water management and agricultural development approach. The GEF-financed project will draw upon the lessons learned regarding enhanced climate-resilient agricultural and livestock production, as well as erosion control through floodwater harvesting and irrigation technologies. One of the lessons learned from the Adaptation Fund project to date is that farmers seek local-level solutions to the environmental challenges they face and acknowledge the benefits of such interventions in terms of increased ecosystem goods and services (e.g. increased water availability, higher agricultural yields, etc.).

- It will learn key lessons from the concluding GEF SIP, Sustainable Land Management Pilot Project (UNDP ID: 2979; GEF ID: 3364), whose objective is “To create the enabling environment (policy, capacity, knowledge, alternatives) necessary for adoption of sustainable land management practices and alleviate environmental degradation while improving livelihoods of the farming communities of the Central Highland Zone (CHZ)”. The project will draw from the lessons learned and replicate the best practices for land management aspects.

The project will draw upon lessons learned, as well as tools and methods developed under the projects above, to reduce duplication and avoid pitfalls during implementation, and, where appropriate, adopt successful approaches that are complementary to this project.

Regarding partnerships within and between government institutions, this project will contribute significantly to bridging the gaps in communication and promote collaboration within and between different entities in government. While the MLWE is the lead Implementing Partner, it will work in close collaboration with the MoA and the MoTC (MSU) as the project’s main focus is on watershed restoration for climate change adaptation within the food production sector. Horizontal linkages and collaboration will therefore be strengthened between these central government institutions for more 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 centers for delivery services, training, technical advice and local level consultations for decision-making and information with 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 steering committee and the Project Coordinating Unit 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 LDCF project and a development partner to the GoSE, will play a central role in ensure that these partnerships work, and will liaise at the highest level with government to ensure that the project delivers the development results as agreed between the GEF-LDCF, UNDP and the government.

iii. **Stakeholder engagement:** The implementation strategy for the LDCF-financed project includes extensive stakeholder participation. Details of the stakeholder participation during the PPG phase are provided in the table below. 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 organigram in the Management Arrangements (section VII), and through the existing structures at national and local/village levels (e.g. VAC, CBOs, Farmer Associations). A stakeholder engagement plan for the implementation phase will be developed during the project inception workshop. Stakeholders will be consulted throughout the project implementation phase to: i) promote community understanding of the project’s outcomes; ii) promote local community ownership of the project through engaging in 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.

Table 1: Matrix of stakeholder participation

Outcome	Output	Stakeholders	Key Responsibilities
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, which includes training on climate change and water resources management, as well as research/data collection, analysis and packaging/publication of information.	NARI MOA	Overseeing: <ul style="list-style-type: none"> • Participation in the capacity and resource needs assessment. • Preparation of capacity development strategy. • Training programme developed and implemented.
	1.1.2 Network and information sharing platform on CCA and climate-smart agriculture (CSA) developed at national, Zoba and sub-Zoba levels.	NARI MOLWE MoA MoTC Zoba, sub-Zoba and Kejabi administrations	Coordinating: <ul style="list-style-type: none"> • Development of network and information sharing platform. • Revitalisation of National Food Information System.

			<ul style="list-style-type: none"> Establishment of Farmer Advisory Services. Establishment of linkages with international institutions.
	1.1.3 Technical and financial support provided to NARI (in association with other academic and research institutions) for conducting research and producing research outputs/products 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.	NARI MOLWE MoA MoTC Zoba, sub-Zoba and Kebabi administrations Farmers	<ul style="list-style-type: none"> Provision of technical and financial support to NARI. NARI – action research and field demonstrations on climate-smart agricultural production practices
	1.1.4 Climate information and monitoring systems developed in association with relevant line ministries, departments – in particular, the Meteorological Services Unit – and local communities based upon data received from hydro-meteorological stations installed under Output 2.2.2	NARI MoTC MOLWE MoA Zoba and sub-Zoba administrations WHO NUEY NUEW Ministry of Health	<p>Coordinating:</p> <ul style="list-style-type: none"> Implementation of operational EWS developed in 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 site, including on public health (e.g. malaria and dengue fever outbreaks are now on the increase in highlands).
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 within institutions involved in extension services on inter alia sustainable land, forestry and water resources management	NARI MOLWE MoA Zoba, sub-Zoba and Kebabi administrations	<p>Coordinating:</p> <ul style="list-style-type: none"> Review and assessment of capacity and capacity needs
	1.2.2 Extension packages reviewed and updated to include best practices and climate-smart approaches through the provision of technical and financial support at national, Zoba, sub-Zoba and Kebabi levels.	MOLWE MoA Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	<ul style="list-style-type: none"> Review of and updating extension packages.
	1.2.3 A long-term strategy developed and implemented for monitoring and evaluating climate-smart: i) water resources use and management; ii) crop productivity; and iii) livestock productivity	MOLWE MOA NARI Zoba, sub-Zoba and Kebabi administrations Farmers	<p>Overseeing:</p> <p>Development of monitoring and evaluation strategy.</p>
2.1 Climate-resilient land use planning implemented over 9,000 hectares 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.	MOLWE Zoba, sub-Zoba and Kebabi administration CBOs Farmers	<p>Overseeing:</p> <ul style="list-style-type: none"> Flood and drought vulnerability mapping. Development and implementation of community-based land-use plans.
	2.1.2 Existing CBOs strengthened, including inter alia Village Agricultural Committees, Water User Associations and Farmers' Associations to coordinate local level participation in climate change adaptation, land use and development planning.	Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	<p>Coordinating:</p> <ul style="list-style-type: none"> Establishment and strengthening of community institutional structures.

	2.1.3 Technical support provided to the Zoba and sub-Zoba administration to inform implementation of the land redistribution process through the: i) classification of land according to potential land uses; ii) mapping of coordinates; and iii) assessment of the availability and quality of resources (e.g. soil and water).	MOLWE MoA Zoba, sub-Zoba and Kebabi administrations	Overseeing: <ul style="list-style-type: none"> 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 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.	MOLWE NARI Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	Coordinating: <ul style="list-style-type: none"> 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 and Halhale.	MOLWE MoA NARI	Overseeing: <ul style="list-style-type: none"> 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 NARI Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	Coordinating: <ul style="list-style-type: none"> 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 trained to undertake sustainable water use and management, including inter alia water harvesting, construction and maintenance of hard and soft engineering interventions.	MOLWE MoA Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	Coordinating: <ul style="list-style-type: none"> Training of: i) technical staff on the assessment of groundwater resources and monitoring; and ii) local communities and households on sustainable water use and
2.3 Increased food production through the implementation of climate-smart agricultural practices across the Tsilima Region.	2.3.1 Climate-smart agricultural practices – informed by research products 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 production systems; iii) conservation agriculture; iv) agroforestry; v) silvopasture; and vi) rangeland and livestock management.	NARI MOLWE MoA Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	Overseeing: <ul style="list-style-type: none"> Implementation of a range of climate-resilient agricultural technologies and methods within and around pilot communities. Establishment of demonstration plots at each of the project intervention sites. Training of local communities on climate-smart agricultural technologies and practices.
	2.3.2 Alternative income-generating livelihoods identified and implemented in selected communities.	MoA MOLWE NARI Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	Coordinating: <ul style="list-style-type: none"> 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	3.1.1 Public awareness-raising and education campaigns conducted in the Tsilima Region using all forms of media (including inter alia print, radio, art and drama).	MoLWE, Zoba, sub-Zoba and Kebabi administrations CBOs Farmers	Overseeing: <ul style="list-style-type: none"> 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 A communication strategy developed and implemented to collect and disseminate knowledge and best practices on: i) climate- and ecosystem-smart watershed restoration; ii) climate-smart agriculture; iii) sustainable land management; and iv) natural resource use.	NARI Zoba, sub-Zoba and Kebabi administrations	

watershed restoration; iii) climate-smart agricultural technologies and measures; and iv) the sustainable use and management of natural resources.	3.1.3 A strategy developed and implemented for: i) scaling up lessons learned to other Zobas, sub-Zobas and Kebabis; and ii) informing decision-making at national level.	MOLWE MoA NARI Zoba, sub-Zoba and Kebabi administrations
	3.1.4 A gender strategy developed and implemented, which includes capacity building and enhancing the participation of women in planning, selecting, implementing adaptation measures and monitoring their success.	MOLWE MoA NARI Zoba, sub-Zoba and Kebabi administrations

iv. **Mainstreaming gender:** Gender is a complex issue in Eritrea. Although women have equal rights in terms of national law, they are still disadvantaged in terms of access to economic opportunities and decision-making. Gender equality is, however, enshrined in the country's legal frameworks, including the National Policy on Gender (2004) and the National Gender Action Plan (2003-2008). In addition, legislation has been passed relating to gender equality issues, including tenure of land. The LDCF-financed project will therefore build on and seek to alleviate gender disparities likely to be imposed by climate change regimes on natural resource based livelihoods. Consequently, there is increasing recognition for women as natural resource managers, evident in their greater leadership representation in contemporary community structures (See Annex M – Baseline Report for more details).

Women farmers are increasingly taking charge of rural households and are taking on a considerable burden. Surveys¹² suggest that Eritrean women face the following problems: i) access to resources such as land and water; ii) access to credit; iii) design limitations including plot size and allocation, as well as labour; and iv) training and extension is limited. Various community-based irrigation programs have been implemented in Eritrea which have proven to generate significant benefits to female headed households. For example, women farmers have increased responsibility and improved their skills in managing both irrigation projects and water management systems. As a result of such programs, women have also increased their financial capacity and the livelihoods of their families. However, there are certain factors which constrain these programs and women's participation in particular including: i) shortage of labour adding to their already burdensome household tasks; ii) capital constraints; and iii) a lack of knowledge in water management.

In line with the National Gender Action Plan and the National Gender Policy, and the GEF¹³ and UNDP¹⁴ policies on gender, gender considerations will be mainstreamed into the project's activities to ensure that women are included in the selection of activities to increase their resilience and income-generation abilities, as well as in the various training and capacity-building programs. Women user groups and female headed households will be targeted. Output 3.1.4 will support the design of a gender strategy to specifically guide the differential needs of men and women and the equitable distribution of benefits, resources, status and rights to them. The project therefore strives to be gender responsive and support the empowerment of women and other vulnerable groups. In addition, technical support and advice will be sought from the National Union of Eritrean Women (NUEW) during the project implementation period to ensure that women's needs in Dbarwa are being properly addressed. In alignment with the rights-based approach to development put forward by Eritrea's National Gender Policy, the LDCF-financed project will identify opportunities to increase youth and female participation in the project's activities and decision-making processes. These will include:

- Inclusion of youth and gender-disaggregated indicators and targets in the results framework of the project, specifically for participation at government and community training workshops, demonstration activities and management committees.
- Targeting of gender- and youth-differentiated vulnerabilities into project interventions so that the most climate vulnerable groups within a community receive support from the project.
- Participation of stakeholders through project planning and implementation to ensure that youth and gender considerations are appropriately mainstreamed into project activities.

The guidance attached in Annex O of the PRODOC (Guidance for gender-sensitive and gender-responsive project implementation) will be further refined and finalised during the inception phase of the project to guide mainstreaming activities during implementation.

v. **South-South and Triangular Cooperation (SSTRc):** This project is country-specific but borrows from global principles of climate change adaptation practice. There is no planned collaboration with other countries for implementation of project activities. Learning and experiences from other ecosystem-based adaptation projects has, however, informed the project strategy and will continue to inform implementation throughout the life of the project.

¹² See Annex M (Baseline Report) for details on the gender dynamics around resource access and use, and vulnerability of women and female-headed households in Tsilima Region.

¹³ GEF Policy on Gender Mainstreaming, 2012

¹⁴ UNDP Gender Equality Strategy 2014-2017

IV. FEASIBILITY

- i. **Cost efficiency and effectiveness:** LDCF resources are designed to be used on activities that are inherently cost effective. The following cost effective measures have been identified during the PPG phase: i) implementing an integrated approach to CCA at watershed level; ii) piloting a community-based EWS in sub-Zoba Dbarwa; and iii) conducting a range of training and awareness raising activities for relevant stakeholders. During the process of selecting CCA interventions, alternative approaches for reducing climate vulnerability of local communities at project intervention sites in Eritrea were considered (See Annex M – Baseline Report, section 13 on proposed climate-smart measures). The costs were determined for small-scale, on-the-ground interventions identified through consultations undertaken at Zoba and sub-Zoba administration levels, as well as at community levels. An evaluation of their cost effectiveness vis-a-vis that of the measures proposed is described below.

In order to reduce costs and to avoid duplication, the LDCF-financed project will pursue an active partnership strategy with other ongoing initiatives, including projects such as those implemented through the GEF Small Grant Programme. Through this collaboration, the project will build on the lessons learned and best practices from past and current projects and ensure that cost effectiveness is included as a selection criteria or in the identification of appropriate adaptation practices and implementation protocols.

The project will enhance and make use of existing national and sub-national structures where possible. In line with the National Implementation Modality (NIM), the project implementation will be almost exclusively undertaken by existing government and local authority structures. This approach is believed to be particularly cost effective, as it reduces costs that would need to be spent on consultant-driven implementation, and it builds the capacity of the government system for ongoing and more widespread implementation of similar climate-sensitive development. For example, NARI will coordinate data collection and analyses undertaken by stakeholders under Outcome 2. Increasing the capacity of existing agencies will reduce project costs, strengthen institutional support and increase the potential for project approaches and newly capacitated staff to be integrated into departments, ministries and institutions beyond project termination. This will contribute to an enabling environment for integrating CCA into long-term planning. Moreover, the size of the Project Coordination Unit (PCU) has been carefully considered to keep costs down while still ensuring effective management of the project, it is likely that staff for the PCU will be largely selected from existing government staff and supported through government co-financing, thereby ensuring that capacity developed through the course of the project will be retained within government institutions.

Importantly, the LDCF-financed project includes technical training for local community members on implementing, maintaining and monitoring project interventions. The training of community members in conjunction with the adoption of a participatory “learning by doing” approach will reduce the overall cost for monitoring project activities. Moreover, it will promote sustainability of the interventions beyond the lifespan of the project.

The LDCF-financed project focuses on building adaptive capacity and the use of both hard and soft engineering interventions which are locally appropriate. The use of exclusively hard infrastructure – such as check dams, gabions, and stone lines – was rejected for various reasons. Firstly, hard engineering interventions are considerably more expensive than softer interventions like ecosystem management. Therefore, the exclusive implementation of hard interventions would result in fewer interventions being implemented and consequently fewer beneficiaries. Secondly, hard interventions may have unintended consequences such as transferring local risks up- or down-stream. A mix of hard and soft climate-smart CCA interventions will be less costly – based upon the cost estimates for hard interventions received from Zoba and sub-Zoba administrations, relevant ministries and departments – and provide protection to more beneficiaries than the exclusive implementation of hard infrastructure.

With regards to the benefits of the proposed interventions, the World Food Programme undertook an evaluation of soil and water conservation projects which indicates that the financial rate of return for physical soil and water conservation structures is ~30% in drier areas¹⁵. However, that does not take into account the off-site benefits of such structures when implemented in conjunction with forestry measures, which include inter alia: i) increased groundwater recharge; ii) reduced formation of gullies; iii) reduced sedimentation of downstream irrigation dams; iv) reduced flooding; and v) increased biodiversity. In addition, the community members involved in project implementation indicated that conservation and forestry measures had a positive impact on their livelihoods. Examples of such impacts included higher groundwater levels in downstream wells compared to groundwater levels in watershed areas where no measures had been implemented and levels continue to decline. A cost-benefit analysis of the CCA interventions will be undertaken during project implementation to inform the replication and scaling up of CCA interventions elsewhere in Eritrea.

¹⁵ World Food Programme. 2005. Report on the cost-benefit analysis and impact evaluation of soil and water conservation and forestry measures.

The project aims to reach close to 17,000 households, and 57% of these are headed by women, who are among the most poor and vulnerable in society. These households will directly benefit from CCA interventions that focus on reducing climate vulnerability through community livelihood enhancement. Crop insurance was identified as a potential solution to compensate farmers for losses incurred through extreme weather events. However, such insurance mechanisms are reliant on inter alia: i) comprehensive climate monitoring systems that are explicitly linked to crop yields; ii) the ability of farmers to pay insurance premiums; and iii) the willingness and ability of government to subsidise insurance premiums. The implementation of such an insurance scheme is currently considered unfeasible for Eritrea for a number of reasons. Firstly, there is insufficient capacity for climate monitoring that is directly linked to crop yields to inform if/when insurance pay-outs should occur. Secondly, the majority of farmers in Eritrea practice rain-fed subsistence agriculture, which leads to low levels of income. As such, they would be unable to service insurance premiums and would consequently be unable to participate in insurance schemes. Based on this analysis, the LDCF-financed project will instead focus on diversifying and strengthening agricultural livelihoods to increase the income earned by subsistence farmers. For example, the project will explore the possibility of value chains with low investment and high returns such as fruit and honey production and processing. This will allow farmers to increase their savings and/or further invest in productive assets, thereby strengthening their capacity to recover from climate shocks.

- ii. **Risk Management:** As per standard UNDP requirements, the risks detailed in the table below will be monitored quarterly by the Project Manager/Coordinator. The Project Manager/Coordinator will report on the status of the risks to the UNDP Country Office who will record progress in the UNDP ATLAS risk log. Risks will be reported as critical when the impact and probability are high (i.e. 5). Management responses to critical risks will also be reported to the GEF in the annual PIR.

Table 2: Project risks

Project risks					
Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Severe drought or other extreme events	Environmental	Agricultural productivity and natural resources will be adversely affected by projected increases in temperature and decreases in rainfall. This will result in an increase in food insecurity. P=4 I=4	Updated and improved climate information, forecasting and projections will be developed and used to fine-tune the technical aspects of project activities, such as the design of soil and water conservation measures. The project will adopt an ongoing learning-by-doing approach that will allow for iterative and adaptive management. Lessons learned will be generated to inform sustainability and replicability of similar interventions elsewhere in the region and in Eritrea.	MoA	Increasing
Continued decline of available groundwater, salinization of wells leading to potential scarcity and competition, leading to possible conflict.	Environmental	The decrease in groundwater availability will negatively impact the use of water for domestic, agricultural and livestock purposes. Consequently, agricultural productivity will decline, livelihoods will be negatively impacted and food security will decrease. P=4 I=4	A number of project activities—including watershed restoration, construction of sub-surface dams, treatment of riverbanks, and soil and water conservation measures—have been identified and designed to recharge groundwater levels. The implementation of these project activities will therefore mitigate against this risk and reduce levels of competition for this scarce resource.	MOLWE	Increasing
Institutional capacity and relationships between line ministries are not sufficient to provide	Organisational	Multilateral Environmental Agreements will not be properly implemented. And climate change will not be mainstreamed into sectoral policies and planning.	Capacity needs assessments will be undertaken, the results of which will inform capacity development. Institutional and technical capacity will be developed to support inter-ministerial coordination and planning around CCA.	MOLWE	No change

effective solutions to climate problems that are complex and multi-sectoral.		P=4 I=4			
Limited human resources and institutional capacity, particularly at the Zoba and sub-Zoba level.	Organisational / Operational	Climate change interventions will not be properly planned and implemented. P=4 I=3	The project has a strong capacity-building and training component, designed to promote effectiveness and sustainability at the local community, sub-Zoba and Zoba administration levels.	MoA	No change
Delays in project implementation, particularly in the development of infrastructure interventions.	Operational	Delays in project implementation may result in climate change interventions not being properly implemented. P=4 I=3	Any bottlenecks in implementation will be identified. Feasibility studies will be undertaken for a number of the proposed water-related infrastructure components – such as the construction of sub-surface dams. Capacity-building programmes will be designed taking the results of the feasibility studies into consideration.	MOLWE	No change
Price escalation and unavailability of commodities and materials.	Financial	Climate change interventions, particularly hard engineering interventions (such as catchment dams) will not be implemented. P=4 I=3	Escalating prices are beyond the control of the project and can only be mitigated by ensuring that the budget for infrastructural components is adequate. Moreover, strong government support will guarantee that sufficient resources will be available to the project.	MOLWE	Increasing
Potential conflict with neighbouring Ethiopia.	Political	Political instability will potentially affect the implementation of the climate change interventions in the project area. P=2 I=2	Current commitments by GoSE suggest that Eritrea is likely to maintain stable political relationships with all its neighbours.	MND	No change

- iii. Social and environmental safeguards: The UNDP environmental and social safeguards requirements have been followed in the development of this LDCF-financed project. In accordance with the UNDP Social and Environmental Screening Procedure, the project is categorized as low risk and – as outlined below – is not expected to have any negative environmental or social impacts. Please see Annex F – Social and Environmental Screening report - for more details.

The project will strengthen the climate information and monitoring system through: i) investments in the hydro-meteorological monitoring network; and ii) capacity-building for early warning systems. In addition, the 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, the project will increase the resilience of communities living within the Tsilima Region 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 climate-smart agricultural and livestock practices as well as land-use and area development plans. In addition to strengthening the capacity of local communities to adapt to climate change, the interventions will increase household income through the promotion of alternative income-generating activities and the diversification of livelihoods.

The project will decrease the vulnerability of communities to the effects of climate change, particularly the availability of water. The most vulnerable sites will be selected for the construction of hard interventions – for example, the construction of dams – as

well as the implementation of soft interventions. The members of targeted vulnerable communities will benefit equally from these interventions. As a result, no conflicts within the communities are anticipated as a result of the project interventions.

The restoration of watersheds will protect natural resources and livelihoods from the effects of climate change. Consequently, only positive effects on land, forestry and water resources are expected from the restoration activities. Ecosystem functioning, for example, will be promoted by the activities as they focus on soil stabilisation, improve water infiltration and restore natural vegetation. Furthermore, revegetated land will be less vulnerable to soil erosion and degradation by intense rains and floods.

Although the project will benefit local communities, it is not expected that this will lead to localised population increases. Rather, it is expected that the CCA interventions will benefit local communities adjacent to and surrounding the pilot sites. Through the public awareness campaigns and the adoption of experiential learning methods – including farmer-farmer exchanges – it is anticipated that the CSA technologies and methods will be replicated elsewhere in Zoba Debub. Consequently, no population displacement is expected as a direct or indirect result of the project.

The table below presents a summary of the identified risks, their probability and impact, as well as their significance, as indicated in the UNDP Social and Environmental Screening Procedure. The full SESP is annexed to the PRODOC (Section XII, Annex F).

<i>Risk Description</i>	<i>Impact and Probability (1-5)</i>	<i>Significance (Low, Moderate, High)</i>	<i>Comments</i>
Risk 1: Duty-bearers do not have the capacity to meet their obligations in the Project	I = 5 P = 2	Medium	The proposed project is essentially a country-driven initiative. Therefore, Eritrean stakeholders will be the ultimate duty-bearers.
Risk 2: Rights-holders do not have the capacity to claim their rights.	I = 4 P = 3	Medium	The proposed project will be implemented in the Tsilima Plain and upper catchment area where poverty and unemployment are high and literacy rates are low, and therefore the ability of individuals and groups to influence decision making is reduced.
Risk 3: Proposed project will involve harvesting of natural forests, plantation development, or reforestation.	I = 1 P = 5	Low	Conservation agriculture and agroforestry techniques will be promoted by the project. Therefore, not all species of plant/tree that is used within the project will be indigenous. The proposed project will promote the regeneration of degraded lands. In addition, agro-forestry and tree enclosures will be promoted. Favourable and beneficial plant/tree species will be selected. Where possible, indigenous species will be prioritized through the collection and harvesting of seeds.
Risk 4: Outcomes of the proposed project will be sensitive or vulnerable to potential impacts of climate change.	I = 1 P = 5	Low	The project is targeting degraded watersheds and agro-productive lands to increase their resilience to climate change.
Risk 5: Proposed project will involve large-scale infrastructure development (e.g. dams, roads, buildings).	I = 3 P = 4	Medium	The project will construct two sub-surface dams for the storage of water. Geo-hydrological assessments and an EIA will be carried out to determine the ideal location for large-scale infrastructure. In addition, communities will be consulted in the broader site selection process.

Environmental and social grievances will be reported to the GEF in the annual PIR.

iv. Sustainability and Scaling Up: The LDCF-financed project has been designed to support the sustainability of the project interventions and promote scaling-up beyond the implementation period. Sustainability will be supported by multiple measures as detailed below.

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 (see Table 1. Matrix of stakeholder participation under Section IV). Furthermore, the project design team engaged with relevant national stakeholders and experts to align activities with national priorities and development goals (see Annex L - List of people consulted during project development - for further details). Close involvement of numerous GoSE institutions and departments in the project's implementation will further promote the future incorporation of the project's approaches into ongoing planning and strategies.

The project interventions also include a strong emphasis on capacity-building, training and institutional strengthening, particularly with respect 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.

The 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 on 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 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 timely responses to climate change and implementation of appropriate CCA interventions within pilot communities. These communities will also be trained on planning, implementing and maintaining CCA interventions. As a result, 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 amongst these stakeholders. Furthermore, it is anticipated that the LDCF investments in strengthening 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 sustainable land, forestry and water resources management; and ii) climate-resilient land-use planning, which will support technical staff within 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 roles, obligations, costs and benefits of the use of communal lands. Furthermore, 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, stonewalls, 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.

The project's interventions will increase the availability of information and planning tools to support future CCA initiatives in Eritrea. A participatory approach will be adopted through LDCF resources. By adopting a "learning by doing" approach, the project will: i) build technical capacity for CCA; ii) address climate change priorities at sub-Zoba, Zoba and national level while simultaneously informing national development plans and policies; and iii) promote ownership of CCA interventions amongst local and national stakeholders. For example, the involvement of extension services and CBOs in the development of climate-resilient land use and area development plans will ensure ownership of the project initiatives as well as on the job skills development for all technical staff involved. Furthermore, the direct involvement of government institutions will demonstrate the potential for integration of approaches and strategies – proposed under this project – into on-going planning processes. Whilst the promotion of ownership will support the integration of cost effective adaptation interventions into local land use and adaptation planning as well as sectoral strategies, budgets and plans.

Importantly, the project design is also aligned with national policies, strategies and legislation for Eritrea, which will further facilitate replication and scaling up. The design, implementation and testing of tools at the local level – aligned with national and regional level policy processes – will ensure that lessons learned at the local level will be up-scaled and replicated elsewhere. Moreover, policies and community by-laws will be developed, which will contribute to the technical knowledge base of land redistribution programmes, thereby facilitating replication. Although the by-laws will be designed for a particular ecosystem, they will inform land redistribution decisions throughout the surrounding Central Highlands Zone where the traditional *diessa* land tenure system is still in place. The tools and lessons learned (e.g. resource assessments, mapping) from applying the 1994 Land Proclamation can then be adapted for implementation in other areas within Eritrea, with support from the Ministries involved.

Knowledge and awareness-raising activities will also be undertaken to improve the understanding of climate change among academia, NGOs and the public. By strengthening the capacity of research institutions to provide knowledge-based advice to the extension services, the project will increase the probability of replication because the research institutions have a national mandate. Similarly,

the extension services have a broader catchment-wide mandate, therefore an empowered extension service will ensure the nationwide implementation of proven CCA interventions implemented by the project.

The LDCF-financed interventions – and the benefits derived from these interventions – have been designed to be replicable in other areas of Eritrea and other LDCs within the region. During project implementation and at the end of the project duration, the benefits of the CCA interventions in the Tsilima Region will be assessed. Lessons learned from this process will be collated and disseminated to support replication of CCA and sustainable forestry, land and water resources management in other regions within Eritrea and elsewhere. In particular, pilot sites will generate evidence of the cost-effectiveness of CCA interventions, including agricultural and ecological interventions, which will facilitate policy and budgetary adjustments. The cost-effectiveness of CCA interventions will also promote replication of these interventions amongst vulnerable local communities who do not have access to financial capital. Furthermore, best practices and lessons learned from the project will be collated and disseminated nationally to inform future programming. This will facilitate the effective replication of CCA interventions by Ministries, such as the MoA and MOLWE.

v. Economic and/or financial analysis: N/A

V. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s): 1,2,5,6,13 and 15					
This project will contribute to the following country outcome included in the UNDAF/Country Programme Document: Eritrea is on track towards the achievement of MDG targets for environmental sustainability					
This project will be linked to the following output of the UNDP Strategic Plan: Output 1.4. Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented					
	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Assumptions
<p>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 National Food Security Strategy and IWRM Action Plan.</p>	Indicator 1: Number of EbA and climate-smart agriculture measures integrated and budgeted into the government policies and programmes.	Current plans, strategies, policies, programs and budgets do not integrate climate resilience considerations	At least 1 policy framework includes adaptation measures and associated budgets	At least 2 policy frameworks (IWRM Action Plan and NFSS) include adaptation measures and associated budgets.	<p>The Eritrean government is fully committed to addressing the impacts of climate change, and both water and agriculture are central to the country's adaptation pathway. The Tsilima Plains are the most important bread basket for the country and the government is investing heavily in increasing agricultural yields from this area.</p> <p>All households in the target area are committed to participating in the project activities and taking-up/adopting climate resilient technologies and practices</p> <p>Both government and farmers are committed to adopting climate resilient technologies and practices. Resilient technologies and practices will include climate smart agriculture, agro-forestry and soil and water conservation measures throughout the Tsilima Plains and Upper Catchment. A multi-stakeholder approach will be used to conduct assessments and develop land use plans that will guide climate-smart watershed restoration,</p>
	Indicator 2: # of direct project beneficiaries (at least 60% women beneficiaries)	0	7,000 households	17,000 households	
	Indicator 3: Area of land under the adaptation practices (# of hectares)	0	4,500 hectares	9,000 hectares	

<p>Component 1 – Information on the impact of ecosystem degradation in aggravating vulnerability to climate change risks and reducing resilience of development gains understood and integrated into key decision-making processes.</p> <p>Outcome 1.1: Capacity of research institutions to undertake climate related research increased</p>	<p>Indicator 4: Number of research products (e.g. toolkits, briefs and guidelines) on climate-smart agriculture developed</p>	<p>0</p>	<p>2</p>	<p>4</p>	<p>agricultural production and livelihood practices.</p> <p>Trainees leave training with improved capacity. Staff will apply outcomes of climate-related research. Climate information and monitoring system established during this project will support climate-smart agriculture 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. The Ministry of Agriculture is committed to improving the quality of agricultural extension and advisory services. Farmers have expressed concern at the lack of up-to-date information, skills and technologies to tackle the challenges presented by climate change and variability. Both government and farmers are therefore willing and committed to finding sustainable and climate resilient solutions. The role of research institutions (e.g. NARI) in finding locally-appropriate/relevant and evidence-based solutions to these challenges will therefore be key and an important aspect of the project support/intervention.</p>
<p>Outcome 1.2: Capacity of extension service institutions to provide knowledge based climate-smart extension services to agriculture, livestock production and water management increased</p>	<p>Indicator 5: Number of climate-resilient land use and area development plans developed and operationalised</p>	<p>Land use and area development plans have not been developed (0).</p>	<p>At least 1 climate-resilient land use and area development plan developed and operationalised</p>	<p>At least 3 climate-resilient land use and area development plans developed and operationalised.</p>	

<p>Component 2 - Climate-resilient land-use planning to support the adoption of climate-smart agricultural and ecological interventions</p> <p>Outcome 2.1: Climate-resilient land use planning implemented over 9,000 hectares of the Tsilima Region</p> <p>Outcome 2.2: Integrated water management operationalised across the Tsilima Region, increasing water availability and land under irrigation</p> <p>Outcome 2.3: Increased food production through the implementation of climate-smart agricultural practices across the Tsilima Region.</p>	<p>Indicator 6: % increase in availability of water and area under irrigation.</p> <p>Indicator 7: Improved score on the "Vulnerability and risk perception index" - disaggregated by gender.</p> <p><i>Vulnerability and Risk Assessment (VRA)¹⁶ to be conducted at 3 intervals: Year 1, 3 and 5 of the project.</i></p>	<p>28 m3 of water 1,352 hectares of irrigated land Baseline to be verified during Year 1 of project implementation.</p> <p>1 - Baseline to be verified during Year 1 of project implementation</p>	<p>At least 15% increase 32 m3 of water 1,550 hectares of irrigated land</p> <p>2 - Target to be verified during Year 1 of project implementation</p>	<p>At least 30% increase 36 m3 of water 1,952 hectares of irrigated land Target to be verified during Year 1 of project implementation.</p> <p>3 - Target to be verified during Year 1 of project implementation.</p>	<p>Cost-effective water resource management measures will be identified and demonstrated/promoted for use and uptake by farmers and other water users.</p> <p>Recommendations for IWRM Action Plan will be accepted and mainstreamed.</p> <p>As part of the food security strategy, the farmers, community and government are committed to increasing food production and are willing to take up improved and climate resilient food/agricultural production practices and technologies.</p> <p>Risk and vulnerability assessments will be carried out and updated.</p>
<p>Component 3</p> <p>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.</p>	<p>Indicator 8: % of targeted population awareness of predicted adverse impacts of climate change and appropriate responses (score) – disaggregated by gender.</p> <p>1 = No awareness level (less than 50% correct)</p> <p>2 = Moderate awareness level (50–75% correct)</p> <p>3 = High awareness level (over 75% correct)</p> <p><i>The results of the survey will be extrapolated from the Vulnerability and Risk Assessment (VRA) to be conducted under Outcome 2.1</i></p>	<p>Baseline level of awareness in target population estimated at 1 (To be verified during Year 1 of project implementation)</p>	<p>Increased level of awareness in target population (1)</p>	<p>Increased level of awareness in target population from 1 (No awareness level) to 2 (Moderate awareness level)</p>	<p>Involvement in the design and implementation of project interventions and ongoing communication on the expected benefits of CSA and livestock production practices for local communities will result in long-term support of the project and adoption of new knowledge, skills and practices in food production and water management systems.</p>

¹⁶ As per guidance in Annex P.

VI. MONITORING AND EVALUATION (M&E) PLAN

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. While these UNDP requirements are not outlined in this project document, the UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy and other relevant GEF policies.

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 during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.

M&E Oversight and monitoring responsibilities:

Project Manager: The Project Manager/Coordinator is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager/Coordinator will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager/Coordinator will inform the Project Steering Committee, MoLWE the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Project Manager/Coordinator will develop annual work plans based on the multi-year work plan included in Annex A, including annual output targets to support the efficient implementation of the project. The Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. gender strategy, KM strategy etc.) occur on a regular basis. In this role, the PM will also be technically supported by the Technical Advisor/Specialist (climate change adaptation) as indicated in the ToRs.

Project Steering Committee: The project steering committee will take corrective action as needed to ensure the project achieves the desired results. The Project Steering Committee will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Steering Committee will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Implementing Partner: The Implementing Partner is responsible for providing any and all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary and appropriate. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used by and generated by the project supports national systems.

UNDP Country Office: The UNDP Country Office will support the Project Manager/Coordinator as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Steering Committee within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the independent mid-term review and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager.

The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.

Audit: The project will be audited according to UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.¹⁷

Additional GEF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project implementation;
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
- c) Review the results framework and finalize the indicators, means of verification 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 in M&E;
- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log, Environmental and Social Management Plan and other safeguard requirements; the gender strategy; the knowledge management strategy, and other relevant strategies;
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
- g) Plan and schedule Project Steering Committee meetings and finalize the first year annual work plan.

The Project Manager/Coordinator will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the MoLWE and UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Steering Committee.

¹⁷ See guidance here: <https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx>

GEF Project Implementation Report (PIR): The Project Manager/Coordinator, the GEF OFP, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager/Coordinator will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the project steering committee. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

GEF Focal Area Tracking Tools: The following GEF Tracking Tool(s) will be used to monitor global environmental benefit results: The baseline/CEO Endorsement GEF Focal Area Tracking Tool(s) – submitted in Annex D to this project document – will be updated by the Project Manager/Team and shared with the mid-term review consultants and terminal evaluation consultants (note: the evaluation consultants hired to undertake the MTR or the TE) before the required review/evaluation missions take place. The updated GEF Tracking Tool(s) will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.

Independent Mid-term Review (MTR): An independent mid-term review process will begin after the second PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 3rd PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and approved by the project steering committee.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Project Manager/Coordinator will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the project steering committee. The TE report will be publically available in English on the UNDP ERC.

The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

Final Report: The project's terminal 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 steering committee during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Table 3: Mandatory GEF M&E Requirements and M&E Budget:

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ¹⁸ (US\$)		Time frame
		GEF grant	Co-financing	
Inception Workshop	UNDP Country Office	USD 10,000		Within two months of project document signature
Inception Report	Project Manager	None	None	Within one month of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None	None	Quarterly, annually
Monitoring of indicators in project results framework	Project Manager /Coordinator		Per year: USD 4,000 (total \$20,000)	Annually
GEF Project Implementation Report (PIR)	Project Manager, GEF OFP and UNDP Country Office and UNDP-GEF team	None	None	Annually
NIM Audit as per UNDP audit policies	UNDP Country Office	Per year: USD 3,000 (total \$15,000)		Annually or other frequency as per UNDP Audit policies
Lessons learned and knowledge generation	Project Manager	None		Annually
Monitoring of environmental and social risks, and corresponding management plans as relevant	Project Manager UNDP CO	None		On-going
Addressing environmental and social grievances	Project Manager UNDP Country Office BPPS as needed	None for time of project manager, and UNDP CO		
Project Steering Committee meetings	Project steering committee UNDP Country Office			At minimum annually

¹⁸ Excluding project team staff time and UNDP staff time and travel expenses.

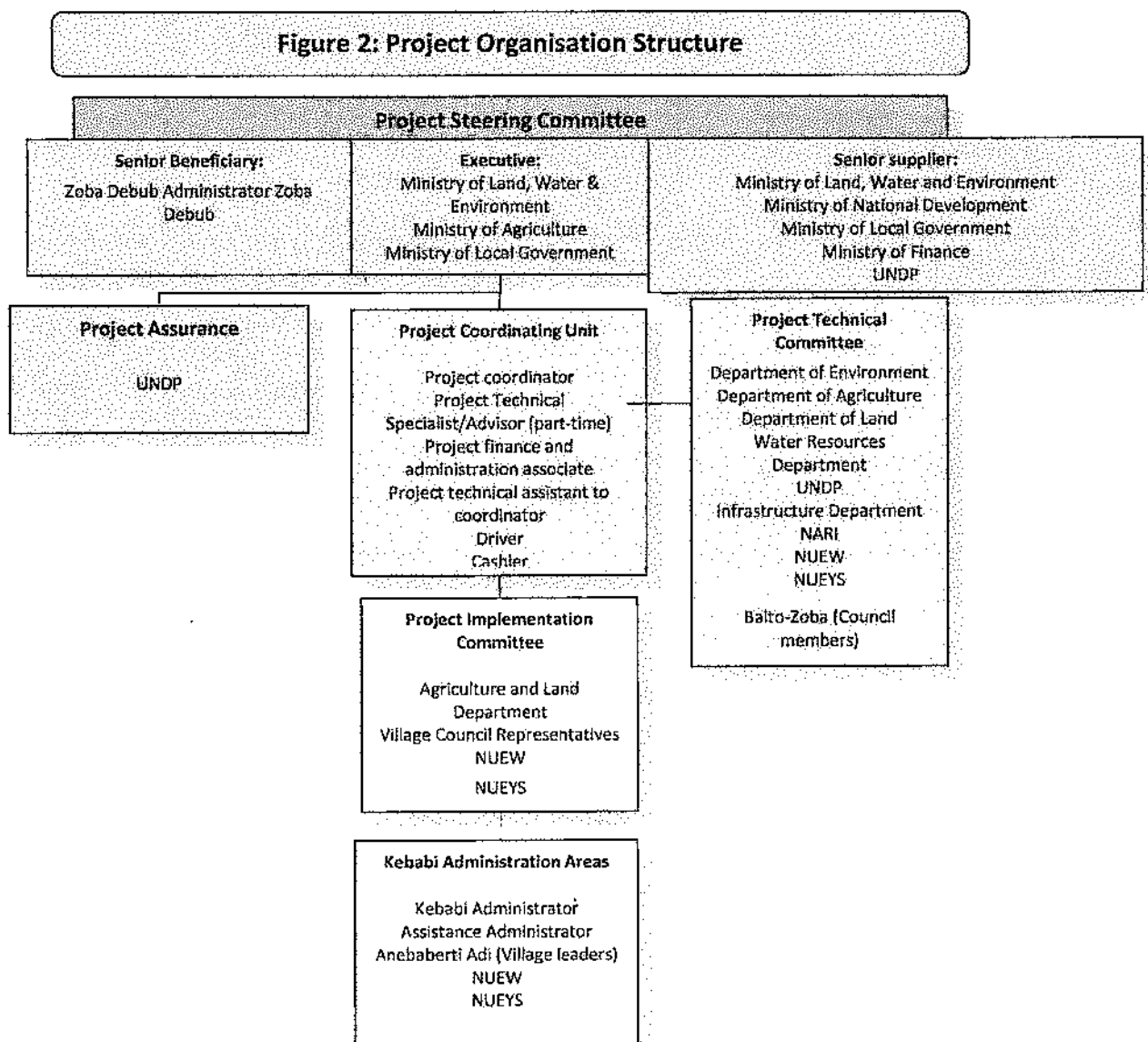
GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ¹⁹ (US\$)		Time frame
		GEF grant	Co-financing	
	Project Manager			
Supervision missions	UNDP Country Office	None ¹⁹		Annually
Oversight missions	UNDP-GEF team	None ¹⁹		Troubleshooting as needed
Knowledge management as outlined in Outcome 3	Project Manager	USD 200,000	USD 50,000	On-going
GEF Secretariat learning mission's/site visits	UNDP Country Office and Project Manager/Coordinator and UNDP-GEF team	None		To be determined.
Mid-term GEF Tracking Tool to be updated by (add name of national/regional institute if relevant)	Project Manager/Coordinator	USD 5,000		Before mid-term review mission takes place.
Independent Mid-term Review (MTR) and management response	UNDP Country Office and Project team and UNDP-GEF team		USD 30,000	Between 2 nd and 3 rd PIR.
Terminal GEF Tracking Tool to be updated by (add name of national/regional institute if relevant)	Project Manager	USD 5,000		Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 35,000		At least three months before operational closure
Translation of MTR and TE reports into English	N/A	None		
TOTAL INDICATIVE COST Excluding project team staff time, and UNDP staff and travel expenses		\$270,000	\$100,000	

¹⁹ The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

VII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Roles and responsibilities of the project's governance mechanism: The project will be implemented following UNDP's National Implementation Modality, according to the Standard Basic Assistance Agreement between UNDP and the Government of the State of Eritrea and the Country Programme.

The **Implementing Partner** for this project is the Ministry of Land, Water and Environment. The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. MOLWE will work closely with the Ministry of Agriculture and the Ministry of Local Government/Zoba Debub to deliver specific project components as outlined in the project strategy. The project organisation structure is as follows:



Project Steering Committee (PSC): comprises representative from MND, MoLWE, MoLG and UNDP, and is chaired by a representative of the DoE. It is responsible for making by consensus, management decisions for a project when guidance is required by the Project Manager, including recommendation for Implementing Partner and UNDP approval of project plans and revisions. The PSC plays a critical role in project monitoring and evaluation by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the PSC can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans. 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 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. The terms of reference for the project steering committee are contained in Annex E. The project steering committee is comprised of the following individuals:

- ✓ An Executive: individual representing the project ownership to chair the group.
 - e.g. Representative of the MOLWE, MoA, and MoLG.
- ✓ Senior Supplier: individual or group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Committee is to provide guidance regarding the technical feasibility of the project.
 - e.g. Representatives of the MoLWE, MND and UNDP.
- ✓ Senior Beneficiary: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Committee is to ensure the realization of project results from the perspective of project beneficiaries.
 - e.g. Representative of Zoba Debub Administration .
- ✓ The Project Assurance role supports the PSC/Committee's Executive by carrying out objective and independent project oversight and monitoring functions. The PC and Project Assurance roles should never be held by the same individual for the same project.
 - e.g. Representatives of Zoba Debub, Agriculture and Land Department.

Project Technical Committee is responsible for guiding the project implementation. The Project Technical Committee will be chaired by the PC and will be assisted by the MOLWE.

Project Coordination Unit: The PCU has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the PSC. The PC's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The additional members of the Project Coordination Unit will provide project administration, management and technical support to the PC as required by the needs of the individual project or PC. The PC function will end when the final project terminal evaluation report – and other documentation required by the GEF and UNDP – has been completed and submitted to UNDP, including operational closure of the project.

Project Implementation Committee is responsible for the implementation of the project. The sub-Zoba Administrator will chair the Project Implementation Committee, which will obtain technical inputs and expert advice from the Project Technical Committee.

Kebabi Administration Areas: The KAA selected by the project will be the direct beneficiaries of the project's interventions. The KAA will be responsible for: i) mobilising community labour; ii) sensitising communities to the project interventions; and iii) some in-kind contribution.

The Project Manager (or Project Coordinator) will run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the PSC. The Project Manager/Coordinator function will end when the final project terminal evaluation report, and other documentation required by the GEF and UNDP, has been completed and submitted to UNDP (including operational closure of the project).

The project assurance role will be provided by the UNDP Country Office specifically. Additional quality assurance will be provided by the UNDP Regional Technical Advisor as needed.

Governance role for project target groups: The key community institution at village or area level is the Kebabi Administration body which encompasses a village/area administrator, an executive director and different communities. To increase the village or kebab 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/village level – including VACs, CBOS and Farmers 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 KAA to facilitate the flow of information between adjacent communities to exchange ideas/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, kebab 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; iv) 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 SWC measures. As a consequence, thereof, 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, through the awareness raising campaign under Component 3.

A stakeholder involvement plan will be developed at the outset of the implementation phase, which will outline stakeholders' participation throughout the project's duration. Refer to section III: Stakeholder Engagement for further details on the involvement of stakeholders during the project implementation phase.

UNDP Direct Project Services as requested by Government (if any): N/A – As is customary with NIM projects in Eritrea, the Implementing Partner in government will handle all project-related procurements and recruitments of project employees. The government has designated the Red Sea Corporation, a subsidiary of government, to handle all project related procurements. Requests for UNDP to carry out recruitments of project employees and procurements are therefore not envisaged for this project.

Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information: In order 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 Policy²⁰ and the GEF policy on public involvement²¹.

Project management: As part of the co-financing support from the government, office space (1 office) will be availed in Dbarwa Town (center of sub-zoba Dubarwa). The project will coordinate with other ongoing projects in the Tsilima region, in particular the IFAD project (The National Agriculture Project) to exchange lessons and experiences to enhance the quality of implementation of the LDCF-financed project.

²⁰ See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

²¹ See https://www.thegef.org/gef/policies_guidelines

VIII. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is USD 36,550,000. This is financed through an LDCF grant of USD 9,050,000, USD 2,500,000 in cash co-financing from UNDP and USD 25,000,000 in parallel co-financing (in-kind). UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

Parallel co-financing: The actual realization of project co-financing will be monitored during the mid-term review and terminal evaluation process and will be reported to the GEF. The planned parallel co-financing will be used as follows:

Co-financing source	Co-financing type	Co-financing amount	Planned Activities/Outputs	Risks	Risk Mitigation Measures
GEF	Grant	\$9 050 000	Components 1, 2 and 3.	N/A	N/A
UNDP	Grant	\$2 500 000	Components 1, 2 and 3.	More pressing challenges emerge for UNDP to support the government on other development issues and funds for environmental interventions get redirected.	At the beginning of the planning year, co-financing for GEF-funded projects will be set aside and allocated to the project as appropriate.
Government of the State of Eritrea	In kind	\$25,000,000	Staff, office space, infrastructure development	Co-financing is not tracked due to lack of adequate reporting systems.	UNDP will follow up annually on the reporting of government co-finance.

Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the project steering committee will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the project steering committee. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team as these are considered major amendments by the GEF:

- a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more;
- b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

Refund to Donor: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. On an exceptional basis only, a no-cost extension beyond the initial duration of the project will be sought from in-country UNDP colleagues and then the UNDP-GEF Executive Coordinator.

Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review project steering committee meeting. The Implementing Partner through a project steering committee decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.

Financial completion: 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).

The project will be financially completed within 12 months of operational closure or after the date of cancellation. 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 closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

IX. TOTAL BUDGET AND WORK PLAN

Atlas Proposal or Award ID:		00095523		Atlas Primary Output Project ID:		00099532								
Atlas Proposal or Award Title:		Mainstreaming climate risk considerations in food security and IWRM in Tsilima Plain and upper catchment area												
Atlas Business Unit		ERITREA												
Atlas Primary Output Project 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												
GEF Component/Atlas Activity	Responsible Party (Atlas Implementing Partner)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note		
Component 1: Information on the impacts on ecosystem degradation in aggravating vulnerability to climate change risks and reducing resilience of development gains understood and integrated into key decision-making processes	MoLG-Zoba Debub	62160	LCDF	71300	Local Consultants	\$69,250					\$69,250	1		
		62160	LCDF	71800	Contractual Services-individuals hired by Implementing Partner	\$36,750	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$100,750	2	
		62160	LCDF	71600	Travel	\$16,000						\$16,000	3	
		62160	LCDF	72100	Contractual services - Companies	\$18,200	\$18,900	\$4,500	\$4,500	\$4,500	\$4,500	\$49,700	4	
		62160	LCDF	72200	Equipment and Furniture	\$134,750	\$61,750					\$196,500	5	
		62160	LCDF	72400	Communication & audio visual equipment	\$28,700	\$34,700	\$34,700	\$34,700	\$34,700	\$34,700	\$167,500	6	
		62160	LCDF	72500	Supplies	\$32,300	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500	\$58,300	7	
		62160	LCDF	72100	Contractual Services - Companies	\$120,000	\$120,000	\$130,000	\$140,000	\$140,000	\$140,000	\$650,000	8	
		62160	LCDF	72800	Information technology equipment	\$32,275							\$32,275	9
		62160	LCDF	73100	Rental & Maintenance-Premises	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000	10	
		62160	LCDF	74200	AV & print production costs	\$13,000	\$30,500	\$15,500	\$15,500	\$15,500	\$15,500	\$90,000	11	
		62160	LCDF	75700	Training, Workshops and Confer	\$96,850	\$232,075	\$1,300	\$34,500			\$364,725	12	
							Donor 1 sub total	\$603,075	\$524,525	\$213,500	\$256,700	\$222,200	\$1,820,000	
				4000	UNDP	72100	Contractual services - Companies	\$16,000	\$4,000	\$34,000	\$4,000	\$39,000	\$97,000	13
				4000	UNDP	72200	Equipment and Furniture	\$5,300	\$5,300	\$5,300	\$5,300	\$5,300	\$26,500	14
		4000	UNDP	72500	Supplies	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$30,000	15		
					Donor 2 sub total	\$27,300	\$15,300	\$45,300	\$15,300	\$50,300	\$153,500			
					Component 1 Total	\$630,375	\$539,825	\$258,800	\$272,000	\$272,500	\$1,973,500			
Component 2: Climate-resilient land-	MoLG-Zoba Debub	62160	LDCF	71300	Local Consultants	\$4,500					\$4,500	16		
		62160	LDCF	71600	Travel	\$24,132	\$13,632	\$13,632	\$13,632	\$13,632	\$13,632	\$78,660	17	
		62160	LDCF	72100	Contractual services - Companies	\$96,675	\$1,206,225	\$182,500	\$182,500	\$182,500	\$1,850,400	\$1,850,400	18	

GEF Component/ Atlas Activity	Responsible Party (Atlas Implementing Partner)	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note	
use planning to support the adoption of agricultural and ecological interventions.		62160	LDCF	72300	Materials & Goods	\$427,258	\$1,154,238	\$1,053,718	\$1,053,718	\$1,053,718	\$4,742,650	19	
		62160	LDCF	72500	Supplies	\$500	\$500	\$500	\$500	\$500	\$2,500	20	
		62160	LDCF	72100	Contractual Services - Companies	\$18,000	\$36,000	\$36,000	\$36,000	\$36,000	\$162,000	21	
		62160	LDCF	72400	Audio Visual & Print Prod Costs	\$26,900	\$16,000	\$3,000	\$3,000	\$3,000	\$51,900	22	
		62160	LDCF	75700	Training, Workshops and Confer	\$32,540	\$56,850	\$21,000	\$21,000	\$31,000	\$162,390	23	
						Donor 1 sub-total 2	\$630,505	\$2,483,445	\$1,310,350	\$1,310,350	\$1,320,350	\$7,055,000	
		4000	UNDP	71300		Local Consultants	\$4,000					\$4,000	24
		4000	UNDP	72100		Contractual services - Companies	\$86,520	\$28,840	\$28,840			\$144,200	25
		4000	UNDP	72300		Materials & Goods	\$45,000					\$45,000	26
		4000	UNDP	72400		Audio Visual & Print Prod Costs	\$708,270	\$361,060	\$253,200			\$1,322,530	27
				Donor 2 sub-total 2	\$843,790	\$389,900	\$282,040	\$0	\$0	\$1,515,730			
				Component 2 Total	\$1,474,295	\$2,873,345	\$1,592,390	\$1,310,350	\$1,320,350	\$8,570,730			
Component 3 - Knowledge management and awareness-raising		62160	LDCF	72100	Contractual services - Companies			\$10,000	\$32,500	\$25,000	\$67,500	28	
		62160	LDCF	75700	Training, Workshops and Confer	\$9,500	\$7,000	\$9,500	\$7,000	\$19,500	\$52,500	29	
		62160	LDCF	74200	Audio Visual & Print Prod Costs		\$2,500	\$2,500	\$2,500	\$2,500	\$10,000	30	
						Donor 1 sub-total 3	\$9,500	\$9,500	\$22,000	\$42,000	\$47,000	\$130,000	
		4000	UNDP	71800	Contractual Services-Individuals hired by Implementing Partner	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$100,000	31	
		4000	UNDP	75700	Training, Workshops and Confer	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$60,000	32	
		4000	UNDP	74200	Audio Visual & Print Prod Costs	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000	33	
						Donor 2 Sub-total 3	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000	\$170,000	
						Total Component 3	\$43,500	\$43,500	\$56,000	\$56,000	\$81,000	\$300,000	
		62160	LDCF	74100		Professional services	\$3,000	\$3,000	\$8,000	\$3,000	\$8,000	\$25,000	34
62160	LDCF	75700		Training, Workshops and Confer	\$10,000					\$10,000	35		
62160	LDCF	72500		Supplies	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000	36		
				Donor 1 sub-total 4	\$15,000	\$5,000	\$10,000	\$5,000	\$10,000	\$45,000			
4000	UNDP	71400		Contract services - Individuals	\$132,154	\$132,154	\$132,154	\$132,154	\$132,154	\$660,770	37		
				Donor 2 sub-total 4	\$132,154	\$132,154	\$132,154	\$132,154	\$132,154	\$660,770			
				Total PMU	\$137,154	\$137,154	\$137,154	\$137,154	\$137,154	\$705,770			
Project management Unit [3]				PROJECT TOTAL	\$2,295,324	\$5,593,894	\$3,049,344	\$1,795,504	\$1,815,004	\$11,550,000			

Budget Summary:

Donor	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)
Grant - LDCF	\$1,258,080	\$3,022,470	\$1,555,850	\$1,614,050	\$1,599,550	\$9,050,000
Co-finance - UNDP	\$1,037,244	\$571,354	\$493,494	\$181,454	\$216,454	\$2,500,000
Co-finance - Government	\$3,305,000	\$8,405,000	\$4,305,000	\$4,505,000	\$4,480,000	\$25,000,000
TOTAL	\$5,600,324	\$11,998,824	\$6,354,344	\$6,300,504	\$6,296,004	\$36,550,000

Budget notes:

1	<p>Fees for national consultants/experts to conduct a comprehensive capacity needs assessments (for research on climate change-related issues) and based on the results/consultations, develop a capacity development programme for NARI and similar institutions. Another capacity assessment will be conducted for the Agricultural Extension Department (EAD) as well as a review and update of the extension packages to ensure that they incorporate climate-risk considerations. This process will be closely conducted with the support of the Technical Advisor/Climate Change specialist. An additional expert will be contracted to undertake a Participatory Rural Appraisal and compile background/baseline information to inform the development of land use and area development plans. The expert will also support the establishment/strengthening of CBOs and facilitating cross-community dialogues on resource management. Total estimated cost is \$69,250 for an estimated total of 235 days.</p>
2	<p>Fees for an expert to work with the team (technically supported and supervised by the Technical Advisor) to coordinate the development of an Early Warning System in sub-Zoba Dbarwa. This EWS coordinator will also contribute to synthesising community observations, traditional knowledge and scientific knowledge, as well as updating existing livelihood maps for sub-Zoba Dbarwa. Total estimated cost is \$20,750 for an estimated 65 days. Contribution of \$80,000 towards the cost of a technical advisor on climate change (see PM3). Total estimated cost is \$100,750.</p>
3	<p>Costs towards travel expenses. \$16,000.</p>
4	<p>Based on the revised extension packages, a piloting of revised extension packages would be conducted in sub-Zoba Dbarwa at five pilot sites to assess and the level of uptake and implementation among farmers/land users. A coordinator will be contracted to support the Agricultural Extension Department and NARI to roll these new packages out with a focus on climate-smart agriculture, including livestock production practices. An M&E expert will be contracted to work closely with the PMU to develop and M&E methodology for assessing/monitoring the adaptation interventions and documenting processes and synthesising lessons. (\$1,5000 total). Total fee is \$49,700 for an estimated 166 days for all experts collectively.</p>
5	<p>Costs of purchasing:</p> <ul style="list-style-type: none"> • 7 motorcycles @ \$5,000 each, total \$35,000 for use by extension agents/officers in each of the project villages. • 27 bicycles @ \$700 each, total \$16,100 for use by extension agents/offices in each of the projects villages • Office equipment (e.g. printers; computers) and furniture - \$145,400 <p>Total estimated cost is \$196,500.</p>
6	<p>Costs of fast internet connection at an estimated cost of \$2,000 per month for the project office and purchase of mobile phones for extension agents. Provision of financial support for the establishment of linkages between NARI and several international institutions and research institutes through subscription to electronic bulletins, research journals and scientific magazines focused on climate change as well as collaborative research programmes. Total estimated costs is \$167,500.</p>
7	<p>Cost of purchasing office supplies and stationery for the project office and some for KAA and extension stations. Total estimated cost is \$58,300.</p>
8	<p>Fees to NARI for undertaking research at <i>inter alia</i> demonstration sites, farmers' fields, enclosures and catchment dams. The focus of the research will be: i) development of drought-resistant and short maturing crops for rain-fed agriculture; ii) conservation agriculture, including tillage management and soil fertility management; iii) watershed restoration and water management; iv) sustainable landscape management; v) sustainable water use and conservation; vi) agroforestry and silvopasture; vii) livestock production, rangeland development and grazing management; viii) post-harvest handling, storage and processing techniques; and ix) timber and non-timber forest products. The grant will also include the publication of research findings. (\$650,000 total).</p>
9	<p>Procure information technology equipment for use by the PMU including computers (at \$2,500 each), digital cameras (at \$1,000 each), colour printers (at \$5000 each) and LCDs (at \$825 each). Total estimated cost is \$32,275.</p>
10	<p>Office rental for extension agents at village level (5 villages) at \$5000 annually. Total cost is \$25,000 for the project period.</p>
11	<p>Costs 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, and have these printed. As part of communication and awareness raising component, as well as the Component 1 (outcome 1.2), manuals, pamphlets and leaflets and provision of training materials to extension agents and farmers will also be procured. Total estimated cost is \$90,000 over the 5-year project duration.</p>

	<p>Costs of conducting training and training workshops as follows:</p> <ul style="list-style-type: none"> • 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 CC into policies, strategies and practices of the different sectors/govern institutions. Three national level conferences at \$3000 each, three regional level conferences at \$2000 each and 3 meetings at sub-Zoba level at \$1500 each. Estimated sub-total cost is \$19,500. • Provision of training for national researchers based at NARI on CSA. Short term training (three months) for 10 researchers at \$3450 each. Total estimated cost is \$34,500. • Hold workshops between relevant sectors/institutions on the resuscitation and population of the National Food Information System. Total \$15,250. • Training on meteorological observation and data analysis for technical staff of the Meteorological Services Unit. Three sessions at \$2000 each, total cost is \$6,000. • 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 \$150 each. Total \$15,300. • Training for community members on tracking key variables for early warning system. Train 460 people at \$100 each. Total \$46,000. • Regional level consultative training and awareness workshop - Fees: 300 persons at \$50 per day. Total \$15,000. • Two national level workshops to review and validate draft revised and updated extension packages at \$6,150 per workshop. Total \$12,300. • Regional and sub-regional level workshops on revised extension services to be held for 80 persons at \$50 each, plus venue hire and supplies. Total \$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 \$15,000 annually. Total \$75,000 total. • Training of frontline extension agents for 5 days a year to apprise them on climate-smart approaches at \$150 per person per day, plus venue hire and supplies. Total \$73,650 total. • Training of KAA and community members on mainstreaming climate risk into kebabli- and community level implementation of climate-smart land use and agricultural practices -- Fees: 448 persons at \$100 each. Total \$44,800. <p>Total estimated cost is \$364,725.</p>
12	<p>Cost for consultant/company to facilitate capacity development/building for community institutions (e.g. Water User Associations, Farmers' Associations, Village Agriculture Committees, etc.) on various aspects such as participatory planning and decision-making and financial management. Estimated cost is \$12,000.</p> <p>Cost of annual monitoring of indicators by PMU, at \$4000 annually. Total is \$20,000.</p> <p>Cost of conducting an independent mid-term review at \$30,000.</p> <p>Cost of conducting an independent terminal evaluation at \$35,000.</p> <p>Total estimated cost is \$97,000.</p>
13	<p>Office supplies for 23 KAA and extension stations for \$26,500.</p>
14	<p>Allocation to NARI for publication of research (see budget note 1) findings (at \$6000 annually). Total estimated cost is \$30,000.</p>
15	<p>Cost of contracting a local/national water resources specialist to undertake a review of the IWRM Action Plan to incorporate responses to climate change impacts on the water sector. This will include undertaking consultations, situational analysis and providing recommendations for the revision of the IWRM Plan. Technical support for this task will be provided by the Technical Advisor/Climate Change specialist. Estimated cost for water resources specialist is \$100 per day for 45 days. Total is \$4,500.</p>
16	<p>Local travel (consultants and officers) to project intervention sites (vehicle hire) to conduct field activities for the duration of the project. \$78,660</p>
17	

18	<p>Cost of contracting service providers/companies to support the Departments of Land and Water, and the PMU to:</p> <ul style="list-style-type: none"> • Undertake soil surveys at \$100 per day for 60 days at during the initial year of implementation. These soil surveys will inform land capability classifications. Estimated cost is \$6,000. • Produce a land capability classification map. Estimated cost is \$11,000. • Undertake audit of the state of land, water and other natural resources at \$100 per day for 60 days. Estimated cost is \$6,000. • Facilitate community consultations to inform the development of land use plans. Estimated cost is \$17,525. • Facilitate inter-community dialogues to establish CBOs and a platform for discussions between CBOs. Estimated cost is \$16,750. • Conduct GIS mapping and plotting of coordinates 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. Estimated cost is \$11,000. • Facilitate community-led water development plans, including: i) 23 Kebabbi level consultations and facilitation to develop water development plans as part of broader land use and area development plans at \$100 each; and ii) 20 inter-village meetings and consultations for negotiation and dialogue throughout the duration of the project at \$200 each. Estimated cost is \$22,300. • Undertake installation as well as routine operation and maintenance of the groundwater monitoring stations and documentation. Estimated cost is \$107,525. • Develop water management tools and guidelines for dissemination. Estimated costs is \$10,000. • Undertake site selection and design of diversion schemes, as well as oversee the construction thereof. Estimated costs is \$54,600. • Undertake survey, design and construction of two earth embankment dams at an estimated cost \$313,100 per dam. Total estimated cost is \$626,200. • Undertake geological and hydrogeological assessments. Estimated cost is \$20,500. • Construct groundwater recharge facilities as per the study and detailed design. Estimated cost is \$345,400. • Facilitate the establishment of effective community water management bodies (i.e. Water User Associations). Estimated costs for facilitation is \$2,900. • Provide maintenance of 200ha of existing permanent enclosures at an estimated of \$1,000 per ha. Estimated total cost is \$200,000. • Identify and implement a range of CSA technologies and methods within and around pilot sites, including: i) conservation agriculture (10 ha at \$10,000 per ha); ii) livestock production (\$100,000 total); iii) climate-smart irrigation program (10 ha at \$20,000 per ha); and iv) agroforestry (60 ha at \$500 per ha). Total estimated cost is \$430,000. <p>Total estimated cost is \$1,850,400.</p>
19	<p>Cost of purchasing and installation of materials and goods as follows:</p> <ul style="list-style-type: none"> • Groundwater monitoring wells (8 at \$3,000 each), including drilling (200m at \$670 per m). Estimated cost is \$158,000. • Staff gauges (110 at \$50 each), including infrastructure to fix gauges (30 cubic metres at \$200 each). Estimated cost is \$11,000. • Automatic stream gauging station, with 3 staff gauges. Estimated cost is \$41,650. • Hydro-meteorological stations. Estimated cost is \$65,000. • Refurbishment of Class 1 meteorological station at estimated cost of \$5,000. • Construction materials, including cement, rock, sand, tools and equipment for the construction of 6 diversion schemes. Estimated cost is \$108,000. • Soil and water conservation schemes, including: check dams (1000 ha at \$100 per ha); hillside terracing (1200 ha at \$1600 per ha; pitting (1200 ha at \$265 per ha); seedlings (1200 ha at \$533 per ha); planting (1200 ha at \$80 per ha). Estimated cost is \$3,073,600. • Enrichment planting on 300ha at an estimated cost of \$1750 per ha. Estimated cost is \$525,000. • Transportation of planting materials at an estimated cost of \$50,400. • Agricultural Inputs for CSA (\$50,000 annually). Estimated cost for the duration of the project is \$250,000. • Equipment and materials for alternative income-generating activities, including: i) beekeeping packages (500 packages at \$200 each); ii) poultry packages (750 packages at \$100 each); iii) small stock packages (500 packages at \$500 each); and iv) agroforestry seedlings (50000 seedlings at \$0.60 each). Estimated cost is \$455,000. <p>Total estimated cost is \$4,742,650.</p>
20	<p>Cost of office supplies to WRD and Water Unit at Zoba Dehub (\$500 annually) to facilitate support for implementation of water sector-related interventions. Estimated total is \$2500.</p>
21	<p>Costs related to labour inputs for soil and water conservation activities conducted by communities over 9600 days at \$15 per day and fees for technical support to strengthen WRD's water resources information database and management system and improve communication systems (@ 18,000). Estimated cost is \$162,000.</p>

	<p>Cost for print materials as follows:</p> <ul style="list-style-type: none"> • Procurement of recent and high resolution satellite imagery for the land capability classification, soil survey and map production - the estimated cost is \$50 per square km and the project area is ~478 km. 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. Total estimated cost is \$23,900. • Developing manuals on operation and maintenance of hard and soft engineering interventions at an annual cost of \$3,000. Estimated cost over the duration of the project is \$15,000. • Preparing an operation and maintenance manual for groundwater recharge facilities. Estimated cost is \$1,000. • Topographic mapping for groundwater recharge facilities. Fees: 200 ha at \$60 per ha. <p>Total estimated cost is \$51,900.</p>	22
	<p>Costs of training and training workshops as follows:</p> <ul style="list-style-type: none"> • Facilitate an exchange of ideas and discuss problems or concerns with CBOs. Estimated cost is \$3,350. • Training for WRD officers on the assessment and monitoring of groundwater resources and adaptive management for 50 people at \$100 each. Total \$5,000. • Training for extension agents, institutions and selected community members on data collection and record keeping, as well as interpretation of climate information and translation into relevant climate forecasts and early warnings. Estimated cost is \$4,000. • Training for technical staff from the WRD and MoA on adaptation techniques and approaches that are specific to water management. Estimated cost is total \$9,800. • Training workshops for local communities on the construction, operation and maintenance of watershed restoration measures and technologies. Estimated cost is \$75,000 for training over the 5 years of project duration. • Training on meteorological observation and data analysis. Estimated cost is \$1,500. • Training on operation and maintenance of groundwater recharge facilities for an estimated 30 people at \$100 each. Total \$3,000. • Training on operation and maintenance of: six water diversion schemes (\$500 each); and two earth embankment dams (\$5,000 each) for WUAs and communities. Total is \$13,000. • Training to community members on the benefits of CSA and livestock production methods (5 training modules at \$3,000 each). Total is \$15,000. • Training to extension agents and CBOs to oversee and coordinate implementation of CSA and livestock production methods (5 training sessions at \$3,000 each). Total is \$15,000. • Training to local communities within each KAA on the implementation and maintenance of CSA technologies and livestock production practices (67 training sessions at \$150 each). Total is \$10,050. • Training/technical facilitation for community members on implementation of income-generating activities. Estimated cost is \$7,690. <p>Total estimated cost is \$162,390.</p>	23
	<p>Cost of contracting a consultant to assist communities in the development of the land use and area development plans. Cost is \$4,000.</p>	24
	<p>Costs for specialist to undertake land capability classifications, community consultations, reviewing and strengthening community bylaws and development of land use and area development plans. Costs of hiring specialists to undertake groundwater and surface water resources assessment. Total estimated cost is \$144,200.</p>	25
	<p>Purchase of project vehicle, and maintenance of the 5 years. Estimated cost is \$45,000.</p>	26
	<p>Materials and equipment for the development and implementation of soil and water conservation measures over 9,000 ha of land within the Tsilima Plain at an estimated cost of \$1,122,530. Equipment and materials for alternative income-generating activities: 160 dairy cattle at \$1,250 each. Total is \$200,000. Total estimated cost is \$1,322,530</p>	27

28	<p>Cost of procuring a service provider to:</p> <ul style="list-style-type: none"> Develop and implement public awareness campaign, including: i) utilising local media to inform communities (\$10000); ii) adopting experiential learning methods (\$5000); iii) organising local level awareness-raising campaigns for farmers on lessons learned and best practices (\$5000); and iv) developing farmer radio shows for broadcasting (\$5000 total). Estimated cost is \$25,000. Establish a good practice database (\$12500); and ii) develop and implement a strategy for scaling up and replicating CCA interventions (\$20000). Estimated cost is \$32,500. Facilitate strategic dissemination of lessons learned: i) nationally through the knowledge and information sharing platform (\$5000 total); and ii) globally via ALIM, GAN and AAKN (\$5000 total). Estimated cost is \$10,000. <p>Total estimated cost is \$67,500.</p>
29	<p>Training modules revised to include gender aspects associated with climate change (\$35000 total). Workshops held to facilitate community consultations with policy makers, the PSC and PTC (\$7500 total). Regional forum held to review and integrate CCA interventions into the Regional Development Plan, Food Security Strategy and IWRM Action Plans (\$10000 total). Total estimated cost is \$52,500.</p>
30	<p>Preparation and publication of user friendly literature on climate change and the benefits of CCA interventions (\$5000 total). Publish guideline documents on inter alia CSA, watershed restoration and sustainable water use and management (\$5000 total). Total Estimated cost is \$10,000.</p>
31	<p>Cost of procuring a service provider to facilitate the adoption of experiential learning methods, including establishment of demonstration plots, farmer-farmer exchanges and field visits (\$30000 total). Also fees for a Gender Specialist to: i) Facilitate mainstreaming of gender issues/collaborate with NUEW to ensure women's needs and interests are adequately represented in project implementation (\$40000); ii) develop a gender strategy (\$15000) and iii) facilitate establishment of a discussion forum to facilitate dialogue on gender issues (\$15000). Total estimated cost is \$100,000.</p>
32	<p>Costs of conducting training programme and awareness-raising campaigns at local level for farmers (\$60,000 total).</p>
33	<p>Costs of developing user-friendly literature on CCA and monitoring CCA interventions for CBOs and local communities (\$10,000 total)</p>
34	<p>Annual audit at \$3,000 (Total \$15,000) Mid-term GEF tracking tool and terminal GEF tracking tool at \$5,000 each (Total \$10,000) Total estimated cost is \$25,000.</p>
35	<p>Inception workshop at \$10,000.</p>
36	<p>Cost of office supplies over the 5 years. Total \$10,000.</p>
37	<p>Project Technical Specialist/Advisor for a total of 24 months spread over the 5-year project duration, at \$213,384 per annum. Estimated total cost is \$426,768. Project Manager/Coordinator: 5 years at \$13,000 per annum. Estimated total cost is \$65,000. Project Finance and Administration Officer: 5 years at \$11,700 per annum. Estimated total cost is \$58,500. Project Technical Assistant: 5 years at \$11,700 per annum. Estimated total cost is \$58,500. Driver: 5 years at \$5,980 per annum. Estimated total cost is \$29,900. Project Cashier: 5 years at \$4,420 per annum. Estimated total cost is \$22,100. Total estimated costs for PMU salaries is \$660,770.</p>

X. LEGAL CONTEXT

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, 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.

The implementing partner shall:

- 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; and
- assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

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 this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the 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 list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm> This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

Any designations on maps or other references employed in this project document do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

XI. MANDATORY ANNEXES

- A. Multi-Year Workplan
- B. Monitoring Plan
- C. Evaluation Plan
- D. GEF Tracking Tool (s) at baseline
- E. Terms of Reference for project steering committee, Project Manager/Coordinator, Project Technical Specialist/Advisor, Project Finance and Administration Assistant, Project Technical Assistant and National Experts of the Support Team
- F. UNDP Social and Environmental and Social Screening Template (SESP)
- G. Environmental and Social Management Plan for moderate and high risk projects (N/A)
- H. UNDP Project Quality Assurance Report
- I. UNDP Risk Log
- J. Results of the capacity assessment of the project implementing partner and HACT micro assessment
- K. UNDP Capacity Assessment Scorecard for the Ministry of Agriculture – Agricultural Extension Department
- L. UNDP Capacity Assessment Scorecard for the Ministry of Agriculture – National Agricultural Research Institute
- M. Baseline Study Report
- N. Procurement Plan
- O. Guidance for gender-sensitive and gender-responsive project implementation
- P. UNDP Guide to the Vulnerability Reduction Assessment

Annex A: Multi Year Work Plan:

EXPECTED OUTPUTS and RESULT INDICATORS	PLANNED ACTIVITIES	TIMEFRAME					RESPONSIBLE PARTY	PLANNED BUDGET		
		Y1	Y2	Y3	Y4	Y5		Funding Source	Budget Description	Amount
Output 1.1.1: Capacity and resources needs assessment undertaken for NARI and capacity development strategy and training programme developed and implemented, which includes training on climate change and water resources management, as well as research/data collection, analysis and packaging/publication of information.	Undertake a capacity and resources needs assessment to identify gaps in staffing, skills and facilities within NARI for addressing climate change.						NARI	LDCF	Contractual Services	\$6825
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.	Develop and implement a capacity development programme to bridge the capacity gaps identified in the above assessment through on-the-job training and engaging with local researchers on climate change.						NARI	LDCF	Contractual Services Training, workshops and conferences	\$34500
	Provide technical and financial support to NARI based upon the results of the assessment.						MOLWE	LCF	Information technology equipment Office equipment Office Supplies	\$108000
Output 1.1.2: Network and information sharing platform on climate change adaptation and climate smart agriculture developed at national and sub-national levels. Result indicator 2: Network and information sharing platform on climate change	Establish a platform for dialogue between research institutions, relevant line ministries and extension services, including NARI, MOLWE and MoA within Zoba Debub and sub-Zoba Dbarwa's administration.						NARI MOLWE MoA MSU Zoba, sub-Zoba and Kebabi Administration	LDCF	Contractual services Training, workshops and conferences	\$19500

<p>adaptation and climate-smart agriculture developed at national and sub-national levels.</p> <p><i>Baseline:</i> There are few linkages between line ministries, academic and research institutions therefore communication and the flow of information is limited.</p> <p><i>Target:</i> By project end-point, network and information sharing platform on climate change adaptation and climate-smart agriculture developed and operational.</p>	<p>Organise periodic capacity development and knowledge sharing sessions with staff, local institutions and farmers on effectiveness of CCA interventions, food security, IWRM and climate change, as well as mandate scholars and academics to: i) present study papers, research results and lessons learned; and ii) produce publications that inform policy- and decision-making processes ensuring that climate change is considered.</p> <p>Facilitate linkages with international organisations and access to research information by: i) subscribing to written and electronic bulletins published by international research institutions, as well as internet-based research portals; and ii) participating in or attending regional forums, workshops, research internships and exchange visits.</p>			<p>NARI MOLWE MoA MSU Zoba, sub-Zoba and Kebabi Administration</p>	<p>LDCF</p>	<p>\$5000</p>
				<p>NARI</p>	<p>LDCF</p>	<p>\$20000</p>
					<p>Contractual services Information technology equipment Training, workshops and conferences</p>	

	<p>Provide technical and financial support for the: i) strengthening of the existing information and communication unit at NARI; ii) revitalisation of the National Food Information System; iii) re-establishment of Farmer Advisory Services; and iv) establishing and/or reinforcing linkages with international institutions working on CSA and related research.</p>		<p>NARI MOLWE MoA</p>	<p>LDCF</p>	<p>Training, workshops and conferences Office equipment Office supplies</p>	<p>\$48125</p>
<p>Output 1.1.3: Technical and financial support provided to NARI (in association with other academic institutions) for conducting research and producing research products on climate-smart agriculture and production systems, including but not limited to: i) drought resistant and early maturing crops; ii) sustainable water use; iii) conservation agriculture practices, including tillage management and soil fertility management; iv) sustainable landscape management; and v) livestock production and grazing management. <i>Result indicator 3:</i> Number of research reports on climate-smart agriculture and production systems. <i>Baseline:</i> National research does not adequately address climate change (in agriculture and production systems). <i>Target:</i> By project mid-point, at least one research report developed. By project end-point, at least three research reports developed.</p>	<p>Develop local level research capacity through implementing 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. Facilitate the production and publication of research reports.</p>		<p>NARI MoA Zoba, sub-Zoba and Kebabi Administration</p>	<p>LDCF</p>	<p>Grant</p>	<p>\$600000</p>
			<p>NARI</p>	<p>LDCF</p>	<p>Grant</p>	<p>\$50000</p>

<p>Output 1.1.4: Climate information and monitoring systems developed in association with relevant line ministries, departments – in particular, the Meteorological Services Unit – and local communities based upon data received from hydro-meteorological stations installed under Output 2.2.2.</p> <p><i>Result indicator 4:</i> Number of people/geographical areas with access to improved, climate-related early warning information. (AMAT indicator 7/8)</p> <p><i>Baseline:</i> Lack of a coordinated climate and information system.</p> <p><i>Target:</i> Number of people, including % female and % of targeted area (e.g. % of country's total area).</p>	<p>Develop and implement a capacity development program for the MSU to address gaps in skills, training, equipment and facilities.</p> <p>Provide training on meteorological observation and analysis to the MSU, other institutions and stakeholders involved in the collection and gathering of meteorological data.</p> <p>Provide technical and financial support to the MSU and other stakeholders to facilitate the establishment of a community-based EWS in sub-Zoba Dbarwa.</p>		MSU	LDCF	Contractual services	\$11750
<p>Output 1.2.1: Capacity and resource needs assessment, development and training programmes implemented within institutions involved in extension services on <i>inter alia</i> sustainable land, forestry and water resources management.</p> <p><i>Result indicator 5:</i> Extension Agents in sub-Zoba Dbarwa receive training on climate risk integration in extension support programmes.</p> <p><i>Baseline:</i> Extension Agents have received limited training and exposure to climate change.</p> <p><i>Target:</i> Capacity increased to a score of 3. Target to be verified during Year 1 of project implementation.</p>	<p>Conduct a needs assessment for the Extension Services Department. This will be initiated and coordinated by MoA following its standard procedures.</p> <p>Provide financial and technical support including equipment and facilities identified as limited within the capacity and resources assessment.</p>		MoA	LDCF	Local consultants	\$10125
			MOLWE MoA	LDCF	Communication and audio equipment Office equipment Office rental Office supplies Vehicles Travel	\$349000

<p>Output 1.2.2: Extension packages reviewed and updated to include best practices and other relevant materials through provision of technical and financial support at national, Zoba, sub-Zoba and Kejabi levels.</p> <p><i>Result indicator 6:</i> Extension packages are reviewed and revised to include best practices identified.</p> <p><i>Baseline:</i> Extension packages are limited.</p> <p><i>Target:</i> By project end-point, extension packages updated to include best practices.</p>	<p>Review and update the extension services packages include aspects that are not covered within the current portfolio and pilot the revised extension services package in sub-Zoba Dbarwa.</p>		MoA	LDCF	Contractual services Training, workshops and conferences Travel	\$59475
	<p>Train extension agents on the revised extension services packages, which will support the transition towards CSA and establish an effective working link with farmers.</p>		MoA	LDCF	Training, workshops and conferences Travel	\$244800
	<p>Develop a strategy to build technical capacity of MoA's Agricultural Extension Services to enable development and transfer of climate-smart agricultural technologies and livestock production practices.</p>		MoA	LDCF	Contractual services Training, workshops and conferences	\$15200
	<p>Develop manuals and leaflets as reference materials and guidelines on agricultural and ecological interventions, as well as methods for monitoring the effectiveness thereof. These documents will be produced on an annual basis and distributed amongst extension agents.</p>		MoA MOLWE NARI	LDCF	AV and print production costs	\$30000

<p>Output 1.2.3: A long-term strategy developed and implemented for monitoring and evaluating climate-smart: i) water resources use and management; ii) agricultural practices; and iii) livestock productivity.</p> <p><i>Result indicator 7:</i> Long-term strategy developed and implemented for monitoring and evaluating climate-smart extension services.</p> <p><i>Baseline:</i> There is no strategy for monitoring and evaluation climate-smart extension services.</p> <p><i>Target:</i> By project mid-point, a strategy for monitoring and evaluation is developed.</p> <p>By project end-point, the strategy for monitoring and evaluation is implemented.</p>	<p>Develop an M&E methodology in pilot areas taking into consideration biophysical and socio-economic indicators and develop performance targets for project interventions.</p> <p>Train the community members, extension agents, NARI technical staff on the M&E methods and techniques, as well as indicators.</p> <p>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.</p>	MOLWE	LDCF	Contractual services Travel	\$4500
<p><i>Baseline:</i> There is no strategy for monitoring and evaluation climate-smart extension services.</p> <p><i>Target:</i> By project mid-point, a strategy for monitoring and evaluation is developed.</p> <p>By project end-point, the strategy for monitoring and evaluation is implemented.</p>	<p>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.</p>	MOLWE	LDCF	Contractual services Training, workshops and conferences	\$21900
<p><i>Baseline:</i> There is no strategy for monitoring and evaluation climate-smart extension services.</p> <p><i>Target:</i> By project mid-point, a strategy for monitoring and evaluation is developed.</p> <p>By project end-point, the strategy for monitoring and evaluation is implemented.</p>	<p>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.</p>	MOLWE	LDCF	Contractual services Training, workshops and conference	\$15000
<p>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 development plans in the Tsilima Region.</p> <p><i>Result indicator 8:</i> Number of drought and flood prone area maps developed.</p> <p><i>Baseline:</i> Drought and flood prone areas have not been identified.</p> <p><i>Target:</i> At least 3 drought and flood prone area maps developed in targeted areas.</p>	<p>Generate maps identifying flood and drought prone areas under climate change conditions which pose a threat to the livelihoods of local communities in the KAA -- based upon the improved hydrological and meteorological data and assessments under Outcome 2.2.</p> <p>Provide technical and financial support to undertake land capability classification, including a soil survey and soil chemical analyses.</p>	MOLWE	LDCF	Contractual services AV and print production costs	\$38900
<p><i>Baseline:</i> There is no strategy for monitoring and evaluation climate-smart extension services.</p> <p><i>Target:</i> By project mid-point, a strategy for monitoring and evaluation is developed.</p> <p>By project end-point, the strategy for monitoring and evaluation is implemented.</p>	<p>Provide technical and financial support to undertake land capability classification, including a soil survey and soil chemical analyses.</p>	MOLWE	LDCF	Contractual services Travel	\$22500

<p>Output 2.1.2: Existing CBOs strengthened and/or new CBOs established, including Village Development Committees, Water User Associations, Farmers Associations and cooperatives to coordinate local level participation</p> <p><i>Result indicator 9:</i> Number of CBOs formed and operational in target areas.</p> <p><i>Baseline:</i> To be determined during Year 1 of project implementation.</p> <p><i>Target:</i> 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.</p>	<p>Engage with sub-Zoba administration, KAA, extension agents and local communities to assist development of climate-resilient land use and area development plans.</p> <p>Provide financial and technical support for the strengthening/establishment of CBOs including VAC, Water User Associations, Farmers Associations and Land Use Committees at local level.</p> <p>Review existing policy and institutional framework and implement community by-laws for sustainable land, forestry and water resources management.</p> <p>Hold training workshops including exchange experiences and meetings wherein stakeholders will be able to exchange ideas and discuss common problems.</p> <p>Create a forum for discussions between CBOs of neighbouring KAA.</p> <p>Assess availability and quality of resources through <i>inter alia</i> land capability classifications and soil surveys.</p>			MOLWE	LDCF	Contractual services Travel	\$7525
			MOLWE Zoba, sub-Zoba and Kebabi administrations	LDCF	Contractual services Travel	\$15400	
			MOLWE Zoba, sub-Zoba and Kebabi administrations	LDCF	Contractual services	\$5000	
			MOLWE MoA Zoba, sub-Zoba and Kebabi administrations	LDCF	Training, workshops and conferences Travel	\$3350	
<p>Output 2.1.3: Technical support provided to the Zoba and sub-Zoba administration to inform implementation of the land redistribution process through the: i) classification of land according to potential</p>			MOLWE MoA Zoba, sub-Zoba and Kebabi administrations	LDCF	Training, workshops and conferences	\$3350	
			MOLWE MoA Zoba, sub-Zoba and Kebabi administrations	LDCF	Contractual services	\$2000	

<p>land uses; ii) mapping of coordinates; and iii) assessment of the availability and quality of resources (e.g. soil and water). <i>Result indicator 11:</i> Assessment of land use area and mapping of coordinates <i>Baseline:</i> Delays in assessing land and mapping individual plots. <i>Target:</i> Land use areas identified and coordinates mapped, and quality of land assessed.</p>	<p>Identify and classify individual parcels of land according to results of assessments. Undertake GIS mapping and plot coordinates for the demarcation of land uses. Hold training workshops for extension agents and subject matter specialists on GIS skills, land surveying and classification of land for climate-resilient land use planning.</p>		<p>MoA Zoba, sub-Zoba and Kebebi administrations</p>	<p>LDCF</p>	<p>Contractual services</p>	<p>\$2000</p>
<p>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 Merab catchment. <i>Result indicator 12:</i> Number of functioning long-term monitoring field sites established in targeted areas for monitoring groundwater and surface water resources. <i>Baseline:</i> There is no monitoring of groundwater and surface water resources. <i>Target:</i> By project end-point at least 3 long-term monitoring sites established within target areas in the Tsilima Region.</p>	<p>Undertake a groundwater and surface water resources assessment and develop a groundwater inventory in collaboration with the WRD and Water Unit at Zoba level. This will include an assessment of the current and projected water demands for all land uses and purposes such as agriculture, domestic and livestock. Develop comprehensive water development and management plans based upon the ground and surface water resources assessment.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Contractual services Consultant Travel</p>	<p>\$40800</p>
			<p>MOLWE</p>	<p>LDCF</p>	<p>Contractual services</p>	<p>\$23300</p>

<p>Output 2.2.2: Hydro-meteorological stations installed and/or refurbished at Mendefera, Dbarwa and Halhale.</p> <p><i>Result indicator 13:</i> Class 1 hydro-meteorological stations installed/refurbished at Mendefera, Dbarwa and Halhale.</p> <p><i>Baseline:</i> Hydro-meteorological stations are no longer operational and/or technology is outdated.</p> <p><i>Target:</i> At least three Class 1 hydro-meteorological stations installed/refurbished at Mendefera, Dbarwa and Halhale.</p>	<p>Provide 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.</p> <p>Purchase and of installation of new hydro-meteorological stations including: i) a Class 1 meteorological station at Mendefera; ii) a Class 3 meteorological station at Dbarwa; and iii) three Class 3 meteorological stations within the upper catchment.</p> <p>Refurbish the existing Class 1 meteorological station at Halhale research station.</p> <p>Establish an appropriate communication system to transmit: i) hydro-meteorological information to the MSU; and ii) transfer early warnings from the MSU to relevant Kebabi administration within sub-Zoba Dbarwa.</p> <p>Provide training for technical staff from NARI, extension agents and other relevant institutions, as well as selected community members on data collection and record keeping.</p>			MOLWE	LDCF	Training, workshops and conferences	\$5000
				MOLWE	LDCF	Contractual services and materials Transport	\$66500
				MOLWE	LDCF	Contractual services Transport	\$5000
				MOLWE MSU Zoba, sub-Zoba and Kebabi administrations	LDCF	Contractual services Travel	\$3000
				MSU	LDCF	Training, workshops and conferences	\$2000

<p>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.</p> <p><i>Result indicator 14:</i> Number of hectares under watershed rehabilitation and management measures.</p> <p><i>Baseline:</i> Rehabilitation and management measures are not being implemented at a watershed level.</p> <p><i>Target:</i> By project end-point, watershed rehabilitation and management measures will be implemented over 9,000 ha of land.</p>	<p>Provide training to MSU on the interpretation of climate information and translation into locally relevant climate forecasts and early warnings.</p>				<p>MOLWE</p>	LDCF	<p>Training, workshops and conferences</p>	<p>\$2000</p>
	<p>Provide financial and technical support to WRD to develop and pilot integrated water management practices within the Tsilima Region.</p>				<p>MOLWE</p>	LDCF	<p>Contractual services Offices supplies Travel Materials and equipment AV and print production costs</p>	<p>\$1008600</p>
	<p>Promote rainwater harvesting by treating land surfaces to decrease infiltration and make runoff available for irrigation and other uses.</p>				<p>MOLWE</p>	LDCF	<p>Contractual services Training, workshops and conferences Equipment and material</p>	<p>\$307860</p>
	<p>Develop and implement soil and water conservation measures over 9,000 hectares of land within the Tsilima Region, including <i>inter alia:</i> i) hillside terracing; ii) establishing 300 hectares of new enclosure areas and maintaining 200 existing permanent and seasonal enclosures; iii) planting of 1.4 million indigenous and multi-purpose trees over an area covering 1,200 hectares of degraded land in the western mountain ranges of the upper catchment area; and iv) incorporation of multi-purpose trees in household woodlots and community enclosures.</p>				<p>MOLWE</p>	LDCF	<p>Contractual services Equipment and materials Grant</p>	<p>\$2564800</p>

<p>Promote natural regeneration and reforestation of degraded watersheds through, <i>inter alia</i>: i) promoting agroforestry by planting ~35,000 seedlings on 600 hectares of farmland – 450 hectares in the Tsilma Plain and 150 hectares 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.</p>							<p>Contractual services and Equipment materials</p> <p>\$725000</p>
<p>Establish and/or upgrade existing forestry nursery sites within sub-Zoba Dbarwa and NARI. These nurseries will produce a variety of tree seedlings – including multi-purpose trees – for planting in enclosures, farms, backyards and roadsides of villages.</p>						<p>MOLWE</p> <p>LDCF</p>	<p>Contractual services and materials</p> <p>\$639600</p>
<p>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.</p>						<p>MOLWE Zoba, sub-Zoba and Kebabli administrations</p> <p>LDCF</p>	<p>Training, workshops and conferences</p> <p>\$19500</p>

<p>Output 2.2.4: Local communities and households trained to undertake sustainable water use and management, including inter alia water harvesting, construction and maintenance of hard and soft engineering interventions.</p> <p><i>Result indicator 15:</i> % increase in number of: i) technical staff; and ii) local community members, trained on meteorological observation, sustainable water use and management, and climate-smart agricultural technologies – disaggregated by gender.</p> <p><i>Baseline:</i> Limited training of technical staff and awareness of local communities on meteorological observation, sustainable water use and management, and climate-smart agricultural technologies.</p> <p><i>Target:</i> At least 75% of technical staff trained.</p> <p>At least 50% of local community members trained.</p>	<p>Provide training to technical staff from the WRD and MoA – at Zoba and sub-Zoba level on adaptation techniques and approaches that are specific to water management</p> <p>Hold 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.</p> <p>Develop manuals on operation and maintenance of hard and soft engineering interventions, including flood control measures, water harvesting interventions, soil and water conservation measures.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Training, workshops and conferences</p>	<p>\$9800</p>
<p>Output 2.3.1: Climate-smart agricultural practices (informed by research reports generated under Output 1.1.3 and land use and development plans prepared under Output 2.2) developed and transferred to farmers, including: i) drought- and disease-resistant varieties; ii) integrated crop-livestock production systems; iii) conservation agriculture; and iv) agroforestry; v) silvopasture; and vi) rangeland and livestock management.</p> <p><i>Result indicator 16:</i> % increase in the number of farmers taking up climate-smart agricultural practices – disaggregated by gender.</p> <p><i>Baseline:</i> Baseline to be verified during Year 1 of project implementation.</p>	<p>Identify and implement a range of CSA technologies and methods within and around pilot communities.</p> <p>Establish demonstration plots at each of the project intervention sites to demonstrate CSA technologies and methods.</p> <p>Train extension agents and CBOs to oversee and coordinate local community involvement in the implementation of CCA interventions and CSA technologies and livestock production practices.</p>		<p>MOLWE MoA NARI</p>	<p>LDCF</p>	<p>Contractual services Materials and equipment</p>	<p>\$710000</p>
			<p>MOLWE Zoba, sub-Zoba and Kebabir administrations</p>	<p>LDCF</p>	<p>Training, workshops and conferences</p>	<p>\$75000</p>
			<p>MOLWE</p>	<p>LDCF</p>	<p>AV and print production costs</p>	<p>\$15000</p>
			<p>MOLWE MoA NARI</p>	<p>LDCF</p>	<p>Contractual services Materials and equipment</p>	<p>\$8000</p>
			<p>MOLWE MoA NARI</p>	<p>LDCF</p>	<p>Training, workshops and conferences</p>	<p>\$13350</p>

<p>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.</p>	<p>Train local communities on the implementation and maintenance of CSA technologies and livestock production practices.</p>		<p>MOLWE MoA Zoba, sub-Zoba and Kebeba administrations</p>	<p>LDCF</p>	<p>Training, workshops and conferences</p>	<p>\$13350</p>
<p>Output 2.3.2: Alternative income-generating livelihoods identified and implemented in pilot communities. <i>Result indicator 17:</i> Population benefits from the adoption of diversified, climate-resilient livelihood options- disaggregated by gender. (AMAT Indicator 3) <i>Baseline:</i> The number of households adopting alternative livelihoods will be determined during Year 1 of project implementation. <i>Target:</i> Number of people, including % female and % of targeted population.</p>	<p>Provide technical and financial support for the identification and implementation of selected income-generating activities.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Equipment and materials</p>	<p>\$425000</p>
<p>Output 3.1.1: Public awareness-raising and education campaigns conducted in the Tsalima Region using all forms of media (including print, radio, art and drama). <i>Result indicator 19:</i> Public awareness activities carried out and population reached. (AMAT Indicator 5) <i>Baseline:</i> Limited awareness of effects of climate change. <i>Target:</i> Number of people/households aware of climate change.</p>	<p>Training of community members on income-generating activities, including agro-processing and marketing skills.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Training, workshops and conferences</p>	<p>\$3040</p>
<p>Output 3.1.1: Public awareness-raising and education campaigns conducted in the Tsalima Region using all forms of media (including print, radio, art and drama). <i>Result indicator 19:</i> Public awareness activities carried out and population reached. (AMAT Indicator 5) <i>Baseline:</i> Limited awareness of effects of climate change. <i>Target:</i> Number of people/households aware of climate change.</p>	<p>Conduct a public awareness campaign using local media to inform communities on the effects of climate change and benefits of appropriate CCA interventions. The campaign should include the development and dissemination of easily comprehensible, user-friendly literature.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Contractual services AV and print production costs</p>	<p>\$20000</p>
	<p>Organise local-level awareness-raising campaigns and training programs for farmers on lessons learned and best practices.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Contractual services AV and print production costs</p>	<p>\$10000</p>

<p>Output 3.1.2: A communication strategy developed and implemented to collect and disseminate knowledge and lessons learned on: i) watershed restoration; ii) climate-smart agriculture; iii) sustainable land management; and iv) natural resource use.</p> <p><i>Result indicator 20:</i> Long-term strategy developed and implemented for monitoring and evaluating climate-smart extension services.</p> <p><i>Baseline:</i> There is no strategy for monitoring and evaluation climate-smart extension services.</p> <p><i>Target:</i> By project mid-point, a strategy for monitoring and evaluation is developed.</p> <p>By project end-point, the strategy for monitoring and evaluation is implemented.</p>	<p>Establish an education programme in local schools on the benefits of CCA interventions, including climate-smart agricultural technologies and livestock production practices and alternative income-generating activities.</p> <p>Provide support to the development and broadcast of farmer radio shows that provide easily accessible and useful agricultural and weather-related information to rural households.</p> <p>Facilitate community consultations with policy-makers, the National Steering Committee and Project Technical Committee.</p> <p>Collate and synthesise lessons learned and best practices from project results, including the benefits of adaptation interventions. Best practices and lessons learned to be disseminated: i) nationally through the information-sharing platform; and ii) globally via the UNDP's Adaptation Learning Mechanism (ALM) and wikiADAPT, as well as the Global Adaptation Network (GAN) and the Africa Adaptation Knowledge Network (AAKN).</p>			<p>MOLWE</p>	<p>LDCF</p>	<p>Contractual services</p>	<p>\$10000</p>
	<p>Provide support to the development and broadcast of farmer radio shows that provide easily accessible and useful agricultural and weather-related information to rural households.</p>		<p>MOLWE</p>	<p>LDCF</p>	<p>Contractual services</p>	<p>Contractual services</p>	<p>\$5000</p>
	<p>Facilitate community consultations with policy-makers, the National Steering Committee and Project Technical Committee.</p>		<p>MOLWE Zoba, sub-Zoba and Kebabi administrations</p>	<p>LDCF</p>	<p>Contractual services</p>	<p>Contractual services</p>	<p>\$7500</p>
	<p>Collate and synthesise lessons learned and best practices from project results, including the benefits of adaptation interventions. Best practices and lessons learned to be disseminated: i) nationally through the information-sharing platform; and ii) globally via the UNDP's Adaptation Learning Mechanism (ALM) and wikiADAPT, as well as the Global Adaptation Network (GAN) and the Africa Adaptation Knowledge Network (AAKN).</p>		<p>MOLWE NARI</p>	<p>LDCF</p>	<p>Contractual services</p>	<p>Contractual services</p>	<p>\$57500</p>

<p>Output 3.1.3: A strategy developed and implemented for: i) scaling up lessons learned to other Zobas, sub-Zobas and Kebabis; and ii) informing policy- and decision-making at national level.</p> <p><i>Result indicator 21:</i> Long-term strategy developed and implemented for monitoring and evaluating climate-smart extension services.</p> <p><i>Baseline:</i> There is no strategy for scaling up lessons learned and using lessons learned for informing policy- and decision-making.</p> <p><i>Target:</i> By project mid-point, a strategy for monitoring and evaluation is developed.</p> <p>By project end-point, the strategy for monitoring and evaluation is implemented.</p>	<p>Develop and implement a strategy for scaling up and replicating project activities and lessons learned throughout Eritrea.</p> <p>Establish a good practice database, including traditional and project activities.</p> <p>Organise a regional forum to review and integrate CCA interventions into the regional development plan, Food Security Strategy and IWRM action plans.</p>	<p>MOLWE</p> <p>MOLWE</p> <p>MOLWE</p>	<p>LDCF</p> <p>LDCF</p> <p>LDCF</p>	<p>Contractual services</p> <p>Contractual services</p> <p>Training, workshops and conferences</p>	<p>\$20000</p> <p>\$10000</p> <p>\$10000</p>
<p>Output 3.1.4: A gender strategy developed and implemented, which includes capacity building and enhancing the participation of women in planning, selecting, implementing measures and monitoring their success.</p> <p><i>Result indicator 22:</i> Gender strategy developed and implemented for enhancing the participation of women in the project implementation.</p> <p><i>Baseline:</i> There is no gender strategy.</p> <p><i>Target:</i> By project mid-point, a gender strategy is developed.</p> <p>By project end-point, the gender strategy is implemented.</p>	<p>Update and extend the portfolio of training modules to include gender aspects associated with climate change that are not covered within the current portfolio. The training programmes will be tailored to the local context with respect to the needs of women.</p> <p>Collaborate with the NUEW to ensure that women's needs and interests are represented in the: i) preparation of land use and area development plans; ii) strengthening and/or establishment of CBOs; and iii) development of community bylaws, under Outcome 2.1.</p>	<p>MOLWE</p> <p>MOLWE</p> <p>MOLWE</p>	<p>LDCF</p> <p>LDCF</p> <p>LDCF</p>	<p>Training, workshops and conferences</p> <p>Contractual services</p>	<p>\$35000</p> <p>\$40000</p>

									MOLWE	LDCF	Training, workshops and conferences	\$15000
									MOLWE	LDCF	Contractual services	\$15000
												\$9,050,000
TOTAL												

Annex B: Monitoring Plan: The Project Manager/Coordinator will collect results data according to the following monitoring plan.

Monitoring	Indicators	Description	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions and Risks
<p>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 National Food Security Strategy and IWRM Action Plan.</p>	<p>Indicator 1: Number of EBA and climate-smart agriculture measures integrated and budgeted into the government and programmes.</p>		<p>Consultations with government institutions Review of strategies, policies, programmes and budgets</p>	Annually	Project Manager/ Coordinator IP	<p>Strategies, policies, programmes and budgets Review reports/results Monitoring progress reports</p>	<p>Assumptions: Project team and evaluators will have access to government officers, local communities, projects sites and documents to allow review of implementation progress</p> <p>Risks: lack of access to stakeholder informants, project sites and documentation.</p>
	<p>Indicator 2: # of direct beneficiaries (at least 60% women beneficiaries)</p>		<p>Consultations with local government institutions and community organisations Surveys</p>	Annually	Project Manager/ Coordinator IP	<p>Reports from consultation processes Survey Results PM/PC's monitoring progress reports</p>	
<p>Project Outcome 1.1</p>	<p>Indicator 3: Area of land under the adaptation practices (# of hectares)</p>		<p>Consultations with central and local government institutions and community organisations Surveys</p>	Annually	Project Manager/ Coordinator IP	<p>Reports from consultation processes Survey Results PM/PC's report Progress reports from MOA</p>	<p>Assumptions: Trainees leave training with improved capacity to implement new approaches/skills. Staff will apply outcomes of climate-related research. Climate information and monitoring system established during this project will support climate-smart agriculture and production systems and the issuing of early warnings. Public institutions, NGOs and resource users will be willing to adopt a partnership approach and work collaboratively to plan and implement</p>
	<p>Indicator 4: # of research products on climate-smart agriculture</p>		<p>Consultations/interviews with NARI Research products</p>	Annually	Project Coordinator IP	<p>Research products Progress reports from NARI PM/PC's report</p>	

<p>Project Outcome 1.2</p>	<p>Indicator 5: # of climate-resilient land use and area development plans developed and operationalised</p>		<p>Consultations with Kebabi Administration, sub-Zoba and local communities -- as well as CBOS -- to develop land use and area development plans, utilising GIS maps and land soil classification survey results etc.</p>	<p>Annually</p>	<p>Project Coordinator IP</p>	<p>Land use and area development plans. PM/PC's monitoring progress reports</p>	<p>land use planning and CCA interventions in the Tsilima Region. Risks: Training may be hampered to non-release of officers to attend training or training gets conducted but capacity to implement remains constrained.</p>
<p>Project Outcome 2.1 and Project Outcome 2.2</p>	<p>Indicator 6: % increase in availability of water and area under irrigation.</p>		<p>Survey of water available for irrigation. Survey of land under irrigation</p>	<p>Annually</p>	<p>Project Coordinator IP</p>	<p>Survey results PM/PC's monitoring progress reports</p>	<p>Assumptions: IP and Project Team are able to identify qualified service providers to conduct the surveys. Risks: IPs capacity to conduct and/or supervise the land and water surveys remain limited</p>
<p>Project Outcome 2.3</p>	<p>Indicator 7: Improved score on the "Vulnerability and risk perception index" (disaggregated by gender)</p>		<p>Conduct vulnerability and risk perception assessment</p>	<p>Annually</p>	<p>Project Coordinator IP</p>	<p>Vulnerability and risk perception assessment report PM/PC's monitoring progress reports</p>	<p>Assumptions: Stakeholders cooperate to facilitate successful conduct of the VRA. Risks: Failure to conduct VRA due to lack of cooperation from the relevant stakeholders.</p>
<p>Project Outcome 3</p>	<p>Indicator 8: % of targeted population awareness of predicted adverse impacts of climate change and appropriate responses (score) – disaggregated by gender. 1 = No awareness level (less than 50% correct) 2 = Moderate awareness level (50–75% correct)</p>		<p>Awareness surveys conducted at local community levels with Consultations with community members/groups</p>	<p>Annually</p>	<p>Project Coordinator IP</p>	<p>Survey results PM/PC's monitoring progress reports</p>	<p>Assumptions: Project team and evaluators have access to communities/stakeholders to conduct awareness surveys. Risks: Lack of access to stakeholders/informants to inform surveys</p>

Annex C: Evaluation Plan:

Evaluation Title	Planned start date Month/year	Planned end date Month/year	Included in the Country Office Evaluation Plan	Budget for consultants	Other budget (i.e. travel, site visits etc...)	Budget for translation
Terminal Evaluation	After terminal PIR	To be submitted to GEF within three months of operational closure	Yes	USD 35,000	N/A	N/A
Total evaluation budget				USD 35,000		

Annex D: GEF Tracking Tool(s) at baseline

[Separate attachment]

Annex E: Draft Terms of Reference

Terms of Reference for Project Steering Committee (PSC)

Background

The PSC will be responsible for undertaking management-related and technical decisions for the project in accordance with this ToR and providing guidance and direction for the project when required.

Tasks of the PSC will include *inter alia* approval of project plans, Annual Work Plans (AWPs) and revisions by the MOLWE. The committee will ensure a continued cohesion between the project and the mandate of the MOLWE. It will also provide additional linkages and interactions with high-level policy components within the Government. The PSC will approve the responsibilities of the PC and intervene when conflicts within the project and between project members arise.

The PSC will comprise the following members:

- Secretary DoE/MOLWE (Chair);
- Representatives of:
 - MoA;
 - MoLG;
 - MoF
 - MND;
- Government representatives of Zoba Debub; and
- UNDP.

Scope of Work

Specific responsibilities of the PSC are as follows:

- Setting a strategic direction, reinforcing government leadership of the programme and coordinating all interventions.
- Providing guidance and agreeing on possible countermeasures/management actions to address specific risks.
- Approving the work plans prepared by the PC (prior to approval by UNEP and UNDP).
- Conducting regular meetings to review the progress of LDCF resources and providing direction and recommendations to ensure that the agreed deliverables are produced to a satisfactory standard.
- Reviewing and approving all activities that are supported by the project based on the project objectives, work plan and availability of funding.
- Providing technical advice to create synergy and uniformity between supported activities, policies and alignment projects.
- Monitoring and evaluation of programme activities through periodic meetings and occasional site visits.
- Receiving reports on all activities supported by the programme to serve as an additional basis for monitoring and assessing LDCF resources' performance and delivery.

Terms of Reference for Project Coordinator (PC)

Scope of Work

The Project Coordinator will be recruited by MOLWE on a full-time basis to coordinate the implementation of LDCF resources. He/she will be accountable for *inter alia*: i) the quality, timeliness and effectiveness of the interventions carried out; and ii) the use of project funds²². The PC will report to the PSC.

Particular responsibilities of the PC include:

- Head the PCU.
- Report to the PSC regarding project progress.

²² The Executing Agency is also accountable for the use of LDCF project funds.

- Oversee and manage project implementation, monitor work progress, and ensure timely delivery of outputs in accordance with GEF and UNDP guidelines.
- Ensure timely preparation of detailed AWP and budgets for approval by PSC.
- Organise the PSC meetings.
- Deliver quarterly progress reports to the MoLWE and UNDP Task Manager and UNDP.
- Provide on-the-ground information for MoLWE and UNDP progress reports.
- Provide technical support to the project, including measures to address challenges to project implementation.
- Supervise, coordinate and facilitate the work of the Project Finance and Administrative Associate (PFAA) and the Project Technical Assistant to the Coordinator (PTA), field officers and the technical committee (including national and international experts).
- Participate in training activities, report writing and facilitation of expert activities that are relevant to the PC's area of expertise.
- Establish linkages and networks with the ongoing activities of other government and non-government agencies.
- Liaise and coordinate with UNDP TM on a regular basis.

Qualifications

- Master's degree in environment, natural resources management, coastal restoration or a closely related field.
- A minimum of 10 years relevant work experience including at least 6 years' experience as a lead project manager in relevant sectors.
- Demonstrated solid knowledge of adaptation to climate change, ecological restoration and sustainable exploitation of natural resources.
- Experience in the public participation development process associated with environment and sustainable development is an asset.
- Experience in working and collaborating within governments is an asset as well as experience in GEF projects.
- Fluent in Tigrigna and English including writing and communication skills.

Reporting

The PC will work closely with the PSC, MoLWE and the UNDP TM to ensure the availability of information on progress and performance regarding the implementation of the project. The PC will deliver progress reports on a monthly basis to the TM, MoLWE and the UNDP CO. These reports will include: i) status of activities; and ii) challenges encountered on the ground during project execution.

Terms of reference for a Technical Specialist/Advisor on Climate Change Adaptation

In close collaboration with the Project Manager/Coordinator, other TS/A, the specialist will support the IP in implementing the LDCF financed project to undertake the following duties:

Project implementation

- Provide technical expertise and strategic guidance to all project components, assuming quality control of interventions, and support the Project Manager in the coordination of the implementation of planned activities under the project as stipulated in the project document/work plan;
- Provide technical inputs into the work of the multi-stakeholder coordination mechanism at all levels and other relevant institutions under the LDCF framework;
- Give input into the development of technical training packages for all target groups and provide peer review function; in certain cases carry out selected training events;
- Advise on key policy and legal issues pertaining to the project;
- Develop Terms of Reference for consultants and sub-contractors, and assist in the selection and recruitment process;
- Provide technical supervisory function to the work carried out by the other technical assistance consultants hired by the project.
- Coordinate the work of all consultants and sub-contractors, ensuring the timely delivery of expected outputs, and effective synergy among the various sub-contracted activities;

- Ensure that technical contracts meet the highest standards; provide input into development of Terms of Reference for sub-contracts, assist with selection process, recommend best candidates and approaches, provide technical peer function to sub-contractors; provide training and backstopping where necessary;
- Assist in mobilizing staff and consultants in the conduct of a mid-term project evaluation, and in undertaking revisions in the implementation program and strategy based on evaluation results;

Project management and monitoring

- Provide hands-on support to the NPC, project staff and other government counterparts in the areas of project management and planning, management of site activities, monitoring, and impact assessment;
- Assist the NPC in the preparation and revision of the Management Plan as well as Annual Work Plans;
- Assist the NPC in monitoring the technical quality of project M&E systems (including AWP, indicators and targets).
- Assist the NPC in adjusting the project Results Framework, as required and in line with corporate requirements;
- Coordinate preparation of the periodic Status Report when called for by the NPC;
- Assist the NPC in the preparation of the Combined Project Implementation Review/Annual Project Report (PIR/APR), inception report, technical reports, quarterly progress and financial reports for submission to UNDP, the GEF, other donors and Government Departments, as required;

Relationship building

- Assist the NPC in liaison work with project partners, development partners, national civil societies and other groups to ensure effective coordination of project activities;
- Engage on and contribute to policy dialogues at all levels, including the national level;

Communication

- Assist in knowledge management, communications and awareness raising and document lessons from project implementation and make recommendations to the project steering committee for more effective implementation and coordination of project activities; and

Outputs

- a. Monthly progressive reports;
- b. Quarterly reports
- c. Annual reports
- c. Final compiled report

Duration of the contract

One-year renewable on basis of TA performance. 4 months full time in a given year.

Essential selection criteria

- Advanced university degree (at least M. Sc. or equivalent) in the area of natural resource management, environmental management or environmental economics;
- At least 10 years of professional experience, of which at least eight are at international level, and 3 are in climate change adaptation;
- Demonstrated experience of working with climate information systems and adaptation planning processes;
- Demonstrated experience in project development, implementation and management;
- Strong skills in monitoring and evaluation;
- Proven experience drafting technical reports or scientific papers;
- Proven experience in developing consultancy works on climate change and adaptation;
- Excellent working knowledge of English and track record in producing English-speaking communications and reports
- Knowledge and understanding of climate change issues and Early Warning System;
- Exposure to multilateral projects;

In addition, proven experience of the following is desirable:

- Previous experience with GEF projects;
- Experience of working and collaborating with governments;
- Experience in working in Africa;
- Ability to effectively coordinate a large, multidisciplinary team of experts and consultants.

Terms of Reference of the Project Finance and Administration Assistant (PFAA)

The PFAA will be nationally recruited and report to the PC. The PFAA will be familiar with both UNEP and UNDP financial administration procedures and financial reporting requirements. He or she will produce the necessary financial reports for UNDP and directly support the PC with administrative tasks.

Responsibilities

- Standardise the finance and accounting systems of the project while maintaining compatibility with the government and UNDPs financial accounting procedures.
- Prepare revisions of the budget and assist in the preparation of the AWP.
- Comply and verify budget and accounting data by researching files, calculating costs and estimating anticipated expenditures from readily available information sources.
- Prepare status reports, progress reports and other financial reports.
- Process all types of payment requests for settlement purposes including quarterly advances to the partners upon joint review.
- Prepare periodic accounting records by recording receipts, disbursements (ledgers, cashbooks, vouchers, etc.) and reconciling data for recurring or financial reports and assist in preparation of annual procurement plans.
- Undertake project financial closure formalities including submission of terminal reports, transfer and disposal of equipment, processing of semi-final revisions, and support professional staff in preparing the terminal assessment reports.
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the project personnel, experts, and experts by preparing annual recruitment plans.

Qualifications

- At least a post-graduate degree in accounting, financial management or a related discipline such as.
- A minimum of 5 years' experience in a senior finance position.
- Previous similar experiences working for International Organisations. Working for an UN agency would be an advantage.
- Experience with procurement processes an advantage.
- Good communication and computer skills.
- Fluent in spoken and written Tigrigna and English.

Terms of Reference for the Project Technical Assistant (PTA)

Under the supervision of the PC, a PTA will be hired to directly support the PC with administrative tasks.

Responsibilities

- Report to the PC
- Assist the PC with PIRs, Project reports and the Project closure workshop.
- Assist the PC with the preparation of visits to the project demonstration sites.
- Assist the PC with daily administrative and logistical tasks.

Qualifications

- Bachelor degree in the field of natural resource management, environment or a related field.
- Experience working in the field of environment and sustainable development an asset.
- Experience in working and collaborating with local authorities an asset.
- Excellent knowledge of English and Tigrigna including writing and communication skills.

General Terms of Reference for National Experts of the Support Team

Local expertise will be sourced where possible in place of international expertise in order to strengthen in-country capacity. National experts will be hired by the project to:

- Collect data.
- Provide advice relevant to their field.
- Monitor interventions.

Additionally, the national experts must be experts in their field. For a more detailed explanation of the responsibilities and qualifications required for specialists and/or service providers, please see below. Furthermore, they should have good knowledge and understanding of Eritrea's climate change vulnerability and an appropriate MSc degree and a minimum of 5 years' experience or an appropriate bachelor's degree and 10 years' experience in their field of expertise. National experts need to be fluent in spoken and written Tigrigna and English.

The hiring procedures to be followed for both international and national experts must include a transparent and competitive process based on normal procedures.

Terms of Reference for the water resources specialist and/or service providers

The water resources specialist and/or service providers will be responsible for undertaking groundwater and surface water resource assessments and the establishment of a groundwater monitoring strategy. The results of which will inform the design and construction of infrastructure for the capture, storage and distribution of water. In addition, the water resources specialist and/or service providers will inform the review of the IWRM Action Plan, development management tools and guidelines, as well as provide the necessary training.

Responsibilities

- Preparation of draft report detailing proposed policy recommendations to facilitate integration of climate risk considerations into IWRM Action Plan.
- Develop water management tools and guidelines for dissemination.
- Provide technical support for the strengthening of WRD's water resources information database and management system.
- Assist with the undertaking of a geological and hydrogeological assessments.
- Facilitate the development of a groundwater inventory.
- Develop water development and management plans.
- Assist in the production of maps identifying flood and drought prone areas under current and projected climate change conditions.
- Install, operate and maintain groundwater monitoring stations.
- Develop and implement a groundwater monitoring strategy.
- Undertake surveys and design plans for construction of water diversions schemes, earth embankment dams and groundwater recharge facilities
- Provide oversight for construction of water storage and harvesting measures.
- Provide training on the assessment and monitoring of groundwater resources and adaptive management of the water sector.

Qualifications

- At least a Bachelor's degree in geohydrology, civil engineering, and/or water management.
- A minimum of 5 years' experience in IWRM, artificial recharge or community-based water management.
- Prior experience in drafting plans, implementing artificial recharge projects, or water harvesting an advantage
- Good communication skills
- Fluent in spoken and written Tigrigna and English

Terms of reference for EWS Coordinator

The EWS Coordinator will be responsible for overseeing the development of a community-based EWS in sub-Zoba Dbarwa, which will adopt a sustainable livelihoods approach. In addition, he/she will be responsible for providing training to MSU and other stakeholders on the collection and gathering of meteorological data.

Responsibilities

- Undertake community-based planning exercise to identify climate risks and impacts thereof on livelihoods
- Design the Early Warning System using a sustainable livelihoods approach
- Collate and synthesise community observations, traditional knowledge and scientific knowledge
- Update and expand existing livelihood maps for sub-zoba Dbarwa.
- Provide training on collection and gathering of meteorological data, with a focus on household data collection for community members.
- Provide training to MSU on the interpretation of climate information and translation into locally relevant climate forecasts and early warnings

Qualifications

- At least a Bachelor's degree in climatology/meteorology, environmental science or related field.
- A minimum of 5 years' experience in developing or implementing EWS
- Previous experience developing community-based EWS an advantage.
- Good communication and GIS skills
- Fluent in spoken and written Tigrigna and English.

Terms of reference for GIS specialist / service provider

The GIS specialist/service provider will be responsible for providing expert advice and skills in the development of land use and area development plans for the classification of land parcels by land uses and capability. In addition, he/she will provide GIS training to relevant stakeholders to facilitate future revisions to the maps.

Responsibilities

- Plot coordinates and assist with mapping of individual parcels of land.
- Generate maps identifying flood and drought prone areas under current and projected climate change conditions
- Consult with Community specialist, water resources specialist, agricultural specialist and relevant service providers on the development of land capability classification maps
- Conduct training exercises and workshops on GIS for extension agents and subject matter specialists on GIS skills and land surveying.

Qualifications

- At least a Bachelor's degree in climatology/meteorology, environmental science or related field.
- A minimum of 5 years' experience in GIS mapping.
- Previous experience developing community-based EWS an advantage.
- Good communication and GIS skills
- Fluent in spoken and written Tigrigna and English.

Terms of reference for Capacity Development and Extension Services specialist

The specialist will be responsible for identifying institutional and human capacity gaps within NARI and agricultural extension officers (at the Zoba and sub-Zoba level) in the research, planning and implementation of CCA interventions. Based upon the outcomes of the capacity and resource needs assessment, the specialist will be responsible for the development of a short-, medium- and long-term strategy for capacity development, as well as a training programme. He/she will be responsible for providing technical guidance and operational support to NAR, MSU and Agricultural Extension Services to enhance performance and quality assurance, share knowledge and build capacity.

Responsibilities

- Identify gaps in staffing, skills, training, equipment and facilities within NARI, MSU and Agricultural Extension Services

- Conduct capacity and resources needs assessments
- Design and implement a capacity development programme including on the job training for: i) academic and research institutions; ii) MSU and other institutions involved in the establishment of an EWS; and iii) sub-Zoba level subject matter specialists in the Agriculture and Land Division.
- Review and update extension services package, including existing training protocols and programmes.
- Develop a strategy to build technical capacity of MoA's Agricultural Extension Services.
- Develop relevant reference materials and guidelines.

Qualifications

- At least a Bachelor's degree in public administration or any development related field.
- A minimum of 5 years' experience in capacity building and training.
- Previous experience in public administration or design and implementation of capacity development programmes an advantage.
- Good communication skills
- Fluent in spoken and written Tigrigna and English.

Terms of reference for community-specialist/service provider

The specialist will primarily be responsible for liaising with local communities throughout the project implementation phase. Extensive community engagement will be required in the development of land use and area development plans. Furthermore, the long-term sustainability of the project will require the establishment/strengthening of CBOs and discussion forums between adjacent communities.

Responsibilities

- Engage with local communities and facilitate dialogue on sustainable water use and management between national, Zoba, sub-Zoba and Kebabi administration and community stakeholders
- Consult with agricultural and water resources specialist as well as service providers to facilitate the development of land capability classification maps.
- Undertake participatory rural appraisals.
- Assist the strengthening/establishment of CBOs including Village Agricultural Committees, Water User Associations, Farmers Association and Land Use Committees.
- Facilitate the development of a discussion forum for CBOs for neighbouring Kebabi Administrative Areas.
- Provide technical oversight and assistance for local communities in the development of land use and area development plans, including community-led water development plans.
- Organise workshops to train local communities on the principles and implementation of sustainable water use and management
- Assist with the development of water management tools and guidelines for dissemination.

Qualifications

- At least a Bachelor's degree in anthropology, environment and/or social sciences.
- A minimum of 5 years' experience in community development.
- Experience in community-based natural resource management, developing and presenting training material an advantage.
- Good organisational, coordinating and communication skills.
- Fluent in written and spoken Tigrigna and English

Terms of reference for agricultural specialist and/or service provider

The agricultural specialist/service provider will be responsible for assessing the state of land, forest and other natural resources and quantifying the impacts of climate change on these resources. This will entail undertaking land capability classifications, soil surveys and chemical analysis. In addition, he/she will be responsible for identifying and implementing restoration measures to ensure the recovery of degraded watersheds.

Responsibilities

- Undertake a soil survey and soil chemical analyses in all 23 Kebabi Administrative Areas

- Undertake audit of the state of land, water and other natural resources.
- Develop land capability classification maps
- Consult with community and water resources specialist as well as relevant service providers on the production of land capability classification maps
- Identify and oversee the implementation of a range of climate-smart agriculture technologies and methods within and around pilot communities.
- Oversee the ongoing maintenance of existing permanent enclosures and facilitate the establishment of new permanent enclosures.

Qualifications

- At least a Bachelor's degree in agriculture.
- A minimum of 5 years' experience in undertaking agricultural research and implementing agricultural practices on a project basis.
- Prior experience in ecosystem restoration and implementing climate-smart agricultural practices and technology an advantage.
- Good organisational and coordinating skills.
- Good communication skills.
- Fluent in written and spoken Tigrigna and English.

Terms of reference of Education and Information specialist and/or service provider

The Education and Information specialist/service provider will be responsible for developing and implementing a public awareness-raising campaign to increase the understanding of Eritrean communities on the effects of climate change and potential climate change adaptation interventions. The specialist/service provider should use both conventional extension methodologies as well as participatory experiential learning methods.

Responsibilities

- Develop and implement a public awareness campaign based upon the information generated by the project.
- Design and print, radio and billsteering committee campaigns to raise public awareness. Other media channels such as social, web-based or mobile channels should also be explored. This campaign should not be limited to adverts, but should also include content rich discussion programmes (radio) and articles (print).
- Organise local level awareness-raising campaigns for farmers to disseminate lessons learned and best practices
- Develop knowledge products and materials for dissemination, including various forms of local media such as radio shows.
- Establish a database for the collation of good practices and knowledge products generated by the project.
- Disseminate lessons learned through the knowledge and information sharing platform and via global/regional platforms.

Qualifications

- At least a Bachelor's degree in environmental management, agriculture or related field.
- A minimum of 5 years' experience in developing public awareness-raising campaigns.
- Experience in developing and presenting training material on environmental/climate-related issues an advantage.
- Good organisational, coordinating and communication skills.
- Fluent in written and spoken Tigrigna and English

Terms of Reference of the M&E Specialist

The M&E Specialist will be responsible for the development and implementation of a M&E methodology for monitoring and evaluation of all Outputs and activities in the pilot areas using the targets and indicators as outlined in the Results Framework. In addition, the M&E specialist will provide training to various stakeholders on low-cost, user-friendly biophysical indicators and rural appraisal tools to measure the impacts of project interventions, including use of water resources, as well as the effectiveness of agricultural and livestock practices.

Responsibilities

- Develop a M&E methodology including performance targets for project interventions.
- Measure the indicators at least twice a year to evaluate the progress of the project in meeting the targets and the application of gender-disaggregated indicators.
- Report to the PSC on the performance of the project according to project and AMAT indicators.
- Participate in the production of reports.
- Provide training to community members, extension agents and NARI technical staff on the M&E methods and techniques.

Qualifications

- At least a Bachelor's degree in environmental management, ecosystem restoration, climate change adaptation or related field.
- A minimum of 5 years' experience in monitoring and evaluating technical projects related to climate change adaptation, ecosystem restoration or management of natural resources.
- Previous experience working with local communities.
- Good communication skills
- Fluent in spoken and written Tigrigna and English.

Terms of reference for the gender specialist

The Gender Specialist will be responsible for ensuring that the project responds to the anticipated effects of climate change on women and men in an equitable manner. In so doing, the specialist will be required to work closely with the NUEW, project team and other specialists, particularly with regards to training to ensure that it is gender sensitive and that women and female-headed households are adequately represented during project implementation.

Responsibilities

- Engage with NUEW (and other stakeholders) on gender issues.
- Develop and implement a gender strategy
- Create a discussion forum to facilitate dialogue on gender issues between CBOs, Kebabi and sub-Zoba administration.
- Collaborate with education and information specialist to ensure that training and awareness-raising materials are gender sensitive
- Consult with community specialist and service providers to ensure that community engagements are gender sensitive and that women are adequately represented in information and training sessions, as well as during decision-making processes.

Qualifications

- At least a Bachelor's degree in environmental management, ecosystem restoration, climate change adaptation or related field.
- A minimum of 5 years' experience in addressing gender issues.
- Previous experience developing gender strategies and working with local communities an advantage.
- Good communication skills.
- Fluent in spoken and written Tigrigna and English.

Terms of reference for conducting a Vulnerability and Risk Assessment

This consultant will be responsible for producing downscaled climate change scenarios for agro - ecological regions and profiling the climatology and climatic hazards and historic impacts. S/he will conduct vulnerability and risk assessment by applying the VRA methodology indicated in Annex P of this PRODOC to collect and analyse data from local communities. S/he will provide technical guidance, quality assurance and ensure that international best practice is used for the Vulnerability and Risk Assessment. Information from the vulnerability and risk assessments will be used to inform the selection of priority adaptation interventions.

Specific outputs to be delivered will include:

- Climate change risks and vulnerability analysis developed for target Districts. This should cover historic climatic trends, particularly drought occurrence and past impacts on major sectors and livelihood systems, and model projections.
- Downscaled climate change scenarios and future impact analyses developed across target agro-ecological region(s), sectors and systems,
- Participatory root-cause analysis of vulnerability conducted and results reported in a reader-friendly format
- Adaptive capacity assessed and recommendations developed
- Gender analysis undertaken to identify the relationships between climate change impacts and men, women and the youth, and identify gender-sensitive, priority adaptation actions in an inclusive manner. Results should be reported in a reader-friendly format;
- Map climate vulnerability “hot-spots”
- V& A report prepared to include the definition of gender-sensitive climate change risks, adaptation options, cost estimates and implementation priorities.
- Recommendations developed for indicators on resilience or vulnerability reduction, including the gender dimension, which could be used for project monitoring and evaluation. include baseline and target values. The NC should look closely at the methodology applied and solutions generated in the first SCCF project in order to extract lessons learned to inform the development of the research methodology.

Expected deliverables:

Successful implementation of the above tasks should lead to:

- Community-level articulation and description of climate change risk (i.e. measure perceptions)
- Measure awareness of climate change risks and their potential, and propose adaptation solutions
- Technical climate change impact, vulnerability and Risk Assessment (V&A) report specifying:
- Adaptation priorities based on cost-benefit and gender analyses
- Measurable and quantifiable indicators for resilience, including baseline and target values.
- Key climate change vulnerability maps
- Key barriers and opportunities for implementation
- Recommendations on requisite capacity building support for implementation of the proposed priority adaptation measures.

Annex F: UNDP Social and Environmental Screening Template (SESP)

[Separate attachment]

Annex G: Environmental and Social Management Plan for moderate and high risk projects

N/A

Annex H: UNDP Project Quality Assurance Report

[Separate attachment] – Also available here:

https://intranet.undp.org/sites/ERI/project/00086482/sitepages/DesignAppraisal.aspx?fid=ERI_00086482_DESIGN_2015&year=2015&fg=

Annex I: UNDP Risk Log

[Separate attachment]

Annex J: Results of the Capacity Assessment of the project implementing partner and HACT micro-assessments

[Separate attachment]

Annex K: UNDP Capacity Assessment Scorecard for the Ministry of Agriculture – Agricultural Extension Department

[Separate attachment]

Annex L: UNDP Capacity Assessment Scorecard for the Ministry of Agriculture – National Agricultural Research Institute

[Separate attachment]

Annex M: Baseline Study Report

[Separate attachment]

Annex N: Procurement Plan

[Separate attachment]

Annex O: Guidance for gender-sensitive and gender-responsive project implementation

[Separate attachment]

Annex P: UNDP Guide to the Vulnerability Reduction Assessment

[Separate attachment]

XII. ADDITIONAL ANNEXES

Annex Q: List of people/organisations consulted during project development

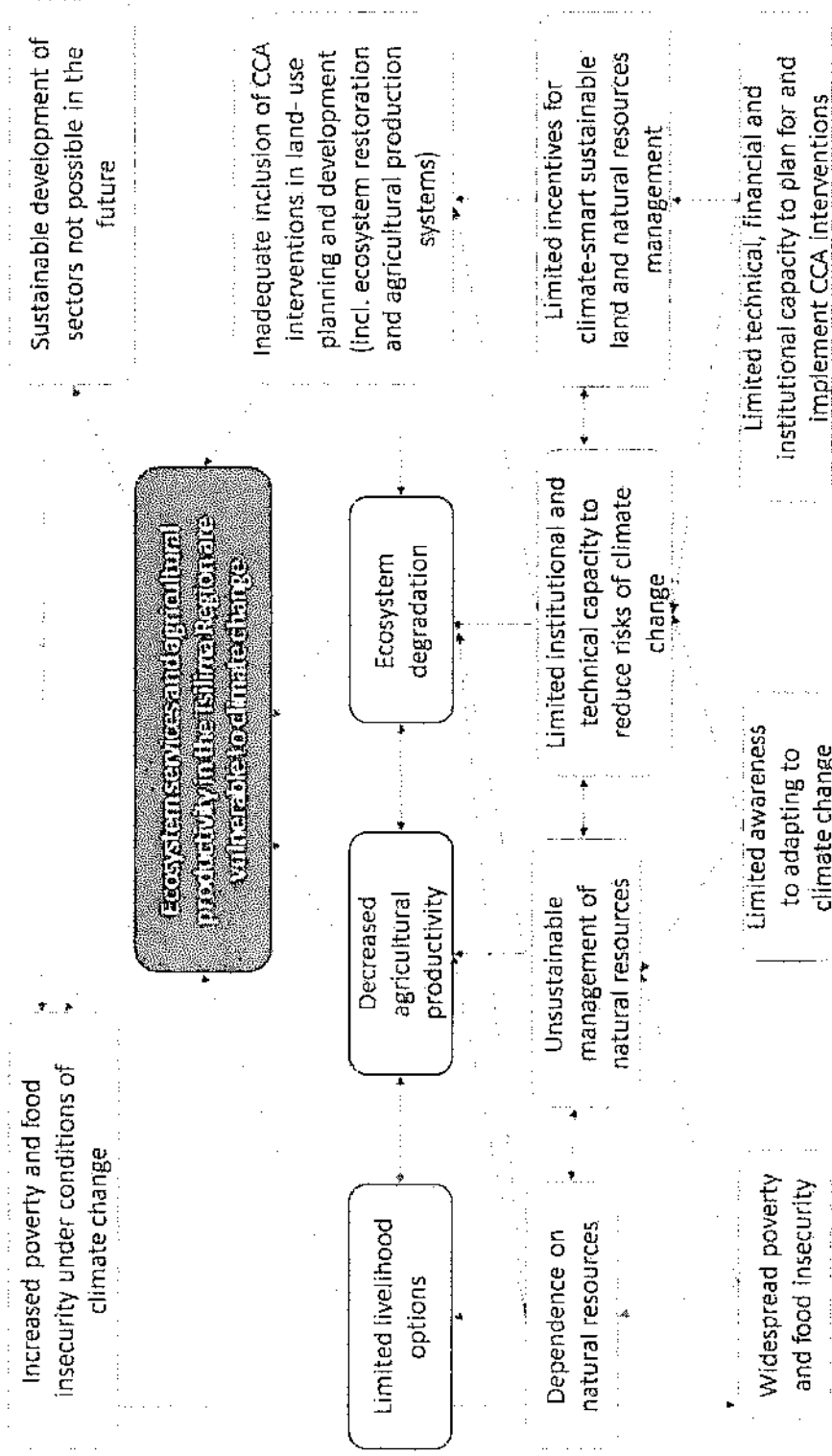
Annex R: Problem and Solution Tree

Annex Q: List of people/organisations consulted during project development

Date	Organisation	Activity
First mission		
Monday 29 June 2015		Inception Workshop
Tuesday 30 June 2015	Department of Environment (DoE/MOLWE)	Meeting with GEF Focal Point, Executing Agencies and Implementing partners
Wednesday 1 July 2015	Department of Environment Department of Agriculture Administration - Zoba Debub Sub-Zoba Dbarwa	Site visit
Thursday 2 July 2015	National consultant	Meeting with International Consultant, National Counterpart and UNDP/ISDU staff
Friday 3 July 2015	National Consultant	Meeting with International Consultant, UNDP/ISDU staff
Tuesday 7 July 2015	SLM Pilot Project	Meeting with SLM Pilot Project Manager
Wednesday 8 July 2015	NARI	Meeting with Director General and Director: Natural Resource Management Division of NARI
Thursday 9 July 2015	National Consultant	Meeting with International Consultant, UNDP/ISDU staff
Second mission		
Tuesday 8 September 2015	National consultant	Meeting with International Consultant, National Counterpart and UNDP/ISDU staff
Wednesday 9 September 2015	Department of Environment (DoE/MOLWE)	Meeting with GEF Focal point, Executing Agencies and implementing partners
Wednesday 9 September 2015	Department of Water Resources (DoWR/MOLWE)	Meeting with key stakeholders
Wednesday 9 September 2015	Ministry of Agriculture	Meeting with key stakeholders
Wednesday 9 September 2015	Department of Land (DoL/MOLWE)	Meeting with key stakeholders
Thursday 10 September 2015	Southern Region Administration/ Governor	Meeting with the Governor and his representatives
Thursday 10 September 2015	NARI	Meeting with key stakeholders
Thursday 10 September 2015	Sub-region Dbarwa Administration	Meeting with Administrator and his representatives
Thursday 10 September 2015	Sub-region Dbarwa Administration and technical expert (agriculture)	Site visit
Friday 11 September 2015	Sub-region Dbarwa Administration and technical expert (agriculture)	Site visit
Monday 14 September 2015	National consultant	Meeting with International Consultant, National Counterpart and UNDP/ISDU staff

Annex R: Problem tree and Solution tree

Problem Tree



Solution Tree

