



REQUEST FOR CEO ENDORSEMENT
PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:LDCF

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PART I: PROJECT INFORMATION

Project Title: Implementing adaptation technologies in fragile ecosystems of Djibouti's central plains.			
Country(ies):	Djibouti	GEF Project ID: ¹	5021
GEF Agency(ies):	UNEP (select) (select)	GEF Agency Project ID:	891
Other Executing Partner(s):	Ministry of Habitat, Urbanism and Environment	Submission Date:	31 January 2014
GEF Focal Area (s):	CCA	Project Duration(Months)	48
Name of Parent Program (if applicable):	NA	Project Agency Fee (\$):	736,000
	<ul style="list-style-type: none"> ➤ For SFM/REDD+ <input type="checkbox"/> ➤ For SGP <input type="checkbox"/> ➤ For PPP <input type="checkbox"/> 		

A. FOCAL AREA STRATEGY FRAMEWORK²

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Cofinancing (\$)
CCA-1 (select)	Outcome 1.2 Reduced vulnerability in development sectors	Output 1.2.1 Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability.	LDCF	5,205,000	10,022,000
CCA-1 (select)	Outcome 1.3 Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	Output 1.3.1 Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including vulnerability	LDCF	1,675,000	3,224,000
CCA-2 (select)	Outcome 2.2 Strengthened adaptive capacity to reduce risks to climate-induced economic losses	Output 2.2.1 Adaptive capacity of national and regional centers and networks strengthened to rapidly respond to extreme weather events	LDCF	480,000	924,000
Total project costs				7,360,000	14,170,000

B. PROJECT FRAMEWORK

¹ Project ID number will be assigned by GEFSEC.

² Refer to the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

Project Objective: Implement climate change adaptation interventions that protect human populations, maintain productive assets and enhance ecosystem resilience in the regions of Hanlé and Tadjourah.						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
Protection against water-related climate change hazards	TA/Inv	1. The negative impacts of droughts and floods are reduced or averted	1.1. Protective measures against droughts and floods in cities and settlements	LDC F	3,071,900	5,914,000
			1.2. A hydrogeological model of current and projected water resources availability	LDC F	626,000	1,205,000
Ecosystem rehabilitation, recovery and resilience	TA/Inv	2. Fragile ecosystems are productive and resilient to climate change	2.1. Restored vegetative cover and soil stabilized in Acacia woodlands in Hanlé and in Tadjourah	LDC F	519,000	999,000
			2.2. Restored mangroves in central coastal zones of Tadjourah	LDC F	651,100	1,254,000
Sustainable and resilient livelihoods	TA/Inv	3. Livelihoods that are sustainable, climate-resilient and contribute to maintaining ecosystem services	3.1. Productive oasis ecosystems that provide livelihoods and ecosystem services	LDC F	1,201,000	2,312,000
			3.2. Increased, diversified and resilient livelihoods from the introduction of sustainable alternative economic development activities	LDC F	156,000	300,000
Institutional capacity for adaptive development and communities' resilience	TA	4. Increased capacity of institutions and communities to adapt to climate change	4.1. Increased institutional and technical capacity of local and national government	LDC F	493,000	949,000
			4.2. Increased institutional capacity at local levels for adaptation to climate change using an ecosystem-based approach	LDC F	165,000	318,000
Subtotal					6,883,000	13,252,000
Project management Cost (PMC)³				LDC F	477,000	919,000

³ PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

Total project costs		7,360,000	14,170,000
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C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Please include letters confirming cofinancing for the project with this form

Sources of Cofinancing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount (\$)
National government	Ministry of Agriculture, Fisheries, Livestock and Hydraulic Resources	Grant	12,800,000
GEF Agency	UNEP	Grant	270,000
GEF Agency	UNEP	Grant	600,000
GEF Agency	UNEP	In kind	500,000
Total Cofinancing			14,170,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in \$)		
				Grant Amount (a)	Agency Fee (b) ²	Total c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				0	0	0

¹ In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this

table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

² Indicate fees related to this project.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount (\$)	Cofinancing (\$)	Project Total (\$)
International Consultants	543,400	1,046,000	1,589,400
National/Local Consultants	314,000	605,000	919,000

G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF⁴

1. No significant changes in alignment with the project design of the original PIF have been made. All outputs have been contextualized to fit Djibouti’s needs following the consultations held during the PPG. Outputs from the original PIF not included in the final design of the LDCF project are:

- Output 2.1.3 “Restored reefs of 2 km2 in coastal zones of Tadjourah”: during the preparatory and design phase it

⁴ For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter “NA” after the respective question.

was established that the coral reef restoration activity should be removed. The first reason is that the estimated cost of coral reef restoration is a minimum of USD 130,000 per hectare. The cost of this activity would thus have been USD 26,000,000. The second reason is that this activity was not aligned with the project title and objectives. Indeed, it is a marine activity while the project is to be implemented in “Djibouti’s central plains”.

- Output 3.1.1 “10 solidified wells, reduced pumping water and sustainable water use”: focused on building water management infrastructure, this activity was not in the correct component. We integrated it into Component 1. The original PIF listed several outcomes and outputs for Focal Area Objectives CCA-1 and CCA-2. However, in refining the project design – as described in Section A – and developing the PIF into the Project Document, it was deduced that some of these outcomes and outputs are no longer relevant. Such outcomes include Outcome 1.1 “Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas” and Outcome 1.2 “Reduced vulnerability in development sectors”. The indicators for these outcomes – and associated outputs – do not apply to the proposed LDCF project activities. Furthermore, as the World Bank project will fund the implementation of an EWS in Tadjourah, the LDCF activities related to EWS have been limited to providing training to the relevant stakeholders on the use of the EWS information and products. Hence, the indicators in Focal Area Objective Output 2.1.2 “System in place to disseminate timely risk information” are no longer applicable to the LDCF activities.

2. The indicative cofinancing in the PIF totalled US\$ 22,080,000. This estimate was made based on discussions with government counterparts at the time the PIF was formulated. However, after further consultation with government and other national stakeholders during the development of the project document, it became apparent that the indicative PIF cofinancing total is an over-estimate. This is particularly true of the government projects implemented by the Ministry of Agriculture, Fisheries, Livestock and Hydraulic Resources. The total indicative cofinancing has therefore been refined to US\$ 14,170,000 million.

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e.

NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

3. The text from the PIF has been further developed and additional strategies and plans of relevance have been added. Please see Section 2.1 of the LDCF project document for further details.

4. The proposed LDCF project will address the following priorities identified in the NAPA.

- “Mitigation of climate change-related risks for the production system of coastal areas through an integrated, adapted and participatory management involving grassroots organisations”. This priority is ranked as the 1st order cross-sectoral priority.
- “Promotion of the integrated agropastoral industry and the development of irrigation techniques to control the salinisation of soils”. This is ranked as the 5th order cross-sectoral priority.
- “Improvement of rangeland management to mitigate the risks associated with the traditional extensive livestock”. This is ranked as the 5th order priority in the food security sector.
- “Restoration of protected sites through the protection of coral reefs and mangrove vegetation”. This is the 7th order priority in the coastal zone and marine ecosystem sector.
- “Implementation of restoration and management actions adapted to surface water”. This last priority taken into account in the proposed LDCF project is the 3rd order priority in the water resources sector.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.

- For this LDCF project, one indicator has been selected at outcome level and one indicator at output level for each of the two Focal Area Objectives CCA-1 and CCA-2. Therefore, four indicators have been selected – one each for Outcome 1.3, Output 1.3.1, Outcome 2.1 and Output 2.1.1. Please see Annex J for specific details. Section A under part II (third bullet point) explain the deviation to the original PIF with regard to the alignment of Focal Area objectives.

A.3 The GEF Agency's comparative advantage:

5. UNEP has experience in implementing approximately 80 projects on adaptation at global, regional and national levels worldwide. These projects develop innovative solutions for national governments and local communities to adapt to the predicted effects of climate change in an environmentally sound manner. This is achieved by: i) providing methods and tools to support decision making; ii) addressing barriers to implementation; iii) testing and demonstrating proposed solutions; and iv) enhancing climate resilience by restoring valuable ecosystems that are vulnerable to climate change. UNEP has accumulated plentiful and significant body of knowledge and experience from its implementation of previous and ongoing projects. The agency will draw upon this experience during the implementation of this LDCF project. Furthermore, UNEP has a proven international and national record. In particular, UNEP has become known for its strong technical and scientific background in the field of climate change. Finally, UNEP's experience in community-based projects and natural resource management is well recognised worldwide. As such, it is an appropriate agency for providing implementation support and capacity development for enhancing climate resilience within Djibouti.

6. UNEP's work on climate change adaptation focuses on three main areas: i) science and assessments; ii) knowledge and policy support; and iii) building the resilience of ecosystems for adaptation. UNEP's Flagship Programme, Ecosystem-based Adaptation, represents a ground-breaking shift in focus in the realm of climate change adaptation. In 2011, this programme was commended at the 17th meeting of the Conference of the Parties to the UNFCCC (CoP17). It has also been endorsed by IUCN, the EC and GEF through the Operational Guidelines on "Ecosystem-Based Approaches to Adaptation" GEF/LDCF.SCCF.13/Inf.06 October 16, 2012. The EbA approach is multidisciplinary in nature. It involves managing ecosystems to enhance their resilience. In addition, it uses ecosystem services to promote climate change adaptation and disaster risk management. Furthermore, it provides a platform for engaging a broad range of stakeholders and sectors in the adaptation process. The adaptation interventions proposed in this LDCF project are well within the scope of UNEP's current work on climate change.

7. The GEF Council paper (C.31/15) outlines the comparative advantages of UNEP. These include providing GEF with the best available science and knowledge upon which to base investments, and provision of expertise on environmental and climate change matters. UNEP also has considerable experience in the piloting of successful innovative approaches and the implementation of adaptive learning. The LDCF project builds upon this comparative advantage. In addition, GEF Council paper (C.28/18) mentions UNEP's comparative advantage of "developing and using climate information to effect changes in relevant sectoral policies based on climate science", which is an area that is addressed by the LDCF project.

8. UNEP has undertaken many projects where innovative solutions and methodologies are demonstrated at inter-regional, national and local levels. All such projects comply with the mandate from the UNEP Governing Council, as detailed in the Bali Strategic Plan for Technology Support and Capacity-building.

9. Collaboration with the UN Country Team in Djibouti is desirable during the implementation of the LDCF project. UNEP's expertise and support will promote the inclusion of the natural environment in the UN Country Team's work. This will increase the long-term benefits of the LDCF project to the environment.

10. UNEP will bring to this project its experience on resource use efficiency gathered by the Division for Industry, Technology and Economics (DTIE). This will be applied to interventions aimed at improving water use efficiency. The LDCF project is consistent with UNEP's other work in the water sector. This work is mandated by the UNEP Governing Council and is based on the UNEP Water Policy and Strategy. It also builds on the achievements of the Environmentally-sound Management of Inland Waters Programme (EMINWA) and other programmes falling under the scope of Integrated Water Resources Management (IWRM). Within this focal area, UNEP draws on its expertise in assessment and monitoring, generation and application of knowledge, and approaches for the better management of water systems. It takes EbA approaches as reference for its water-related activities.

11. The LDCF project will also build on UNEP DEPI's emerging Drylands Strategy as there will be a strong emphasis on promoting innovative techniques for sustainable pastoralism. Furthermore, the majority of the infrastructure and restoration interventions will be linked to and benefit from the Green Economy paradigm led by UNEP. The project will also benefit from ongoing work within UNEP towards analysing and documenting the ecological foundation of food security. Additionally, the PROVIA programme provides insight into the economic assessment of ecological services, EbA and tools for urban and coastal planning. Finally, the LDCF project will also benefit from research and demonstration efforts undertaken within the UNEP-led Integrated Marine & Coastal Environment and Resource Management project. This project provides tools for integrated sustainable management of coastal zones and marine protected areas. These UNEP-led initiatives provide additional cofinancing for this project totalling 1.37 million US\$ until 2014.

12. UNEP has a long history of working with the Government of Djibouti on addressing the threats of climate change. This includes the national communications to the UNFCCC, development of the NAPA and implementation of the first NAPA LDCF project. In addition, UNEP has facilitated regional partnerships which greatly improve the delivery of high quality project outputs in a cost-effective manner. This is a result of utilising the capacities built and experiences gained thus far. While not benefitting from in-country presence, UNEP works using a "direct" implementation modality through its Nairobi office. Additionally, expert technical advisors are delegated to a specific country or project. UNEP also has a regional coordination office for Africa, with a sub-office in Addis Ababa, which can provide assistance.

13. To date, UNEP has implemented four national projects in Djibouti including those with GEF support. Additionally, the agency has implemented four regional projects and two global initiatives with components in Djibouti. UNEP is therefore well-versed in Djibouti's national priorities with respect to climate change. It also understands the government agencies' institutional needs and capabilities with respect to climate change adaptation. UNEP also has extensive field expertise in the establishment of successful field-level projects. Using this expertise, lessons learned from the piloting of innovative approaches at the community level can be integrated into national policy, and vice-versa. The overall arrangement for this project fits well with "a stronger mandate to work at national level" given by Governments to UNEP at the Rio+20. [Rio+20, A/CONF.216/L.1].

A.4. The baseline project and the problem that it seeks to address:

14. The following baseline projects seek to address the major problems in Djibouti, which are summarised in the following points:

- Erosion is caused by overgrazing and deforestation for woodfuel. These practices reduce vegetation cover, decrease the amount of fodder available for livestock, and ultimately lead to desertification. Reduced fodder is detrimental to pastoralism, which is a major economic activity in the rural areas of Djibouti. Furthermore, when bare soil is exposed to rainfall, surface runoff increases and soil infiltrability decreases. This increases the propensity for flooding.
- Reduced water availability is caused by reduced water infiltration, which decreases groundwater recharge and surface water storage over time.
- Food availability is reduced by decreased water availability. Agriculture is mainly rain-fed in Djibouti and is therefore dependent on surface water availability. Lower agricultural yields increase local communities' reliance on ecosystem-based food supplies which further worsen desertification. In addition, livestock grazing and deforestation are also responsible for a reduction in food availability for local communities.
- Poverty leads to food insecurity because it prevents families from buying enough food resource to meet their needs.
- Poverty also prevents many families from accessing health care. Health insecurity is another major issue in the country.
- Djibouti receives thousands of refugees every year which increase food insecurity and health insecurity.

15. The LDCF project will build on the ongoing activities of selected baseline projects described below. The fourth component of the LDCF project will improve the synergy between the baseline projects.

16. *INDS/PIP*: The first INDS was implemented during the period 2007-2012. A second INDS (2011-2015) was established in 2011, which included the same action plans as its predecessor. A Public Investment Programme (PIP) was developed to contribute to the goal of achieving MDGs and which supports priorities contained in the INDS. The intervention priorities defined by the INDS include:

- the increase of water availability through the creation of hard infrastructure, such as wells, boreholes, water points and reservoirs, and the increase of knowledge about current and future water availability;
- the building of tourism infrastructure, the increase of funding for tourism projects, and the training of communities in the development of tourism activities;
- the increased use of sustainable agricultural practices, particularly water and soil use and pest control (focused on two sites in particular, one of which is Hanlé); and
- the improvement of water points, the increase of commercial opportunities for pastoralists, research on the effects of climate change on the agriculture sector in collaboration with CERD and MHUE, the training of local communities in beneficial and suitable agriculture practices, the increase of institutional and financial capacity and the development of vegetable gardens around schools⁵.

Several projects have been implemented to address these intervention priorities. These projects include the **Programme for Surface Water Availability Increase and Sustainable Land Management** (PROMES-GDT) and **Project for Rural Communities Development and Water Availability** (PRODERMO) projects that the LDCF project will build its activities upon.

17. *PROMES-GDT* (US\$ 3 million over six years): The PROMES-GDT was created by the government to promote rural development as part of the INDS. PROMES-GDT was launched in 2007 by the MAPE-RH with the support of FIDA⁶, FFEM, PAM, FEM and UNDP⁷. This programme will be implemented until 31 December 2014. The main objective of the PROMES-GDT is to improve the livelihoods of rural communities through the sustainable use of natural resources⁸. The programme is focused mainly on three areas, including the Day Forest, Randa-Makarassou and Dora regions in the north of Tadjourah. The PROMES-GDT activities which the LDCF project will build upon are described below.

- *Water availability*: Several water reservoirs, water retention basins for pastoral plots and micro-dams have been constructed or repaired. The LDCF project will expand these activities to other sites in Tadjourah and will benefit from lessons learned as well as guidelines developed and published in the PROMES-GDT mid-term report.
- *Agropastoralism*: One of the objectives of the PROMES-GDT is to improve fodder availability by establishing fenced grazing plots to exclude livestock and facilitate the recovery of fodder plants. However, the programme has had difficulty obtaining the support of the local communities for this approach. The LDCF project will provide training to local communities on the benefits of sustainable agropastoral practices. This training will promote the use of grazing enclosures. Additionally, the establishment of agropastoral plots which incorporate climate-resilient plants will increase the sustainability of the PROMES-GDT interventions.
- The LDCF project will build on PROMES-GDT by: i) restoring degraded watersheds, pastoral rangelands, riparian areas and mangroves using a combination of EbA and hard engineering techniques, that will increase the resilience of water management infrastructure to climate and climate change-related hazards such as droughts, floods and erratic rainfall; ii) providing scientifically rigorous information to guide the location and appropriate design of sustainable, climate-resilient water management infrastructure; iii) increasing knowledge and technical capacity at national and local levels to plan and implement sustainable, climate-resilient water management practices and cost-effective adaptation measures under conditions of climate change (see Annex Q).

18. *PRODERMO* (US\$ 5,8 million over five years): The PRODERMO project is led by MAPE-RH with the funding support of the WB and IDA. This project was initiated in 2012 and is currently being implemented in some parts of Hanlé and Tadjourah (Appendix 13 Figure 8). PRODERMO was designed to maximise the synergies of PROMES-GDT activities and to target areas that are not covered by PROMES-GDT, namely, Hanlé, Tadjourah, and Khor Angar and Oulma in Obock. The objectives of PRODERMO include: i) increase rural communities' access to

⁵ in collaboration with the MHUE and MAPE-RH.

⁶ Fond International pour le Développement de l'Agriculture.

⁷ PROMES-GDT MTR June 2012.

⁸ <http://www.dj.undp.org/pratiques/FichePROMES-GDT.html>

water; ii) enhance their capacity to manage water; and iii) enhance their capacity to manage agropastoral resources. These objectives will be achieved using a participatory approach to community-based development⁹. Similar activities to the PROMES-GDT project are being conducted by PRODERMO in Hanlé and will be built on by the LDCF project, including: i) the construction of water reservoirs, water retention basins and wells, the rehabilitation of boreholes, and the equipping of all of these with solar-powered pumps; ii) the rehabilitation and demarcation of six pastoral plots of 400 ha each; and iii) the development of alternative livelihoods such as handicrafts. The construction of two boreholes in Darkenlé and Ad Bouya is scheduled for 2014. These boreholes will be used to irrigate two of the agropastoral plots established by the LDCF project in Tadjourah. Additionally, the LDCF project will build on the PRODERMO project by: i) providing scientifically rigorous information to guide the location and appropriate design for the sustainability and climate-resilience of water management infrastructure and restoration activities in pastoral rangelands; ii) building hard infrastructures such as gabion walls that will increase the resilience of water management infrastructure to climate and climate change-related hazards such as droughts, floods and erratic rainfall; and iii) increasing cost-effectiveness of PRODERMO investments through providing information on successes and failures of alternative livelihood options and best-practice implementation protocols (see Annex Q).

19. The lessons learned by PRODERMO/PROMES-GDT technical teams on the design, construction and maintenance of water extraction and retention infrastructure will be used by the LDCF project. Additionally, the approach used by PRODERMO to engage communities in reforestation will also be adopted in the LDCF project. Knowledge on tree nursery management and forest preservation will be shared between projects.

20. PWSSRA (US\$ 10.1 million for the period 2013–2017): The Project on Water Supply and Sanitation in: i) the Rural Areas of Tadjoura, Arta and Ali Sabieh districts; ii) the district centres of Tadjourah and Ali Sabieh (PWSSRA) is funded by the AfDB and coordinated by the MAPE-RH. The programme's objective is to sustainably improve the living conditions of the rural populations in Djibouti. The implementation sites for this programme are the Tadjourah, Arta and Ali Sabieh regions. The project activities include: i) constructing water management infrastructure; ii) conducting public awareness campaigns to promote hygiene; iii) creating Water Management Committees; and iv) training local communities in the maintenance of water management material. The LDCF project will enhance the resilience of the PWSSRA's activities by: i) providing scientifically rigorous information to guide the location and appropriate design for the sustainability and climate-resilience of water management infrastructure and restoration activities in pastoral rangelands; ii) increasing national and local technical capacity for sustainable management of water resources and infrastructure, including through the establishment of efficient local water management committees, water reuse and water harvesting techniques, and appropriate training tools; and iii) increasing the climate resilience of the communities' livelihoods and the infrastructure constructed by the PWSSRA project (see Annex Q).

21. *PDPD*¹⁰ (US\$ 500,000): The **Project of Support to the Development of Date Palm Cultivation** (PDPD) is funded by the Islamic Development Bank and was initiated in 2005. This objective of this project is to promote the planting of date palm trees for food production and protection against drought in arid countries. The PDPD project is part of the national strategy for the improvement of food security and the decrease of rural poverty. The PDPD is coordinated by the MAPE-RH. At present, 20,000 palms have been planted. Additionally, a laboratory for the in vitro propagation of date palms was established at CERD in 2006 to meet the increasing demand for planting material. Trees propagated in this laboratory were selected for their tolerance to adverse growing conditions such as droughts and saline soils. The process of hardening off¹¹ has been recognized as a critical phase in the cultivation of date palms and as a result the PDPD has been investigating acclimation protocols since 2011 to select the most appropriate method. The PDPD has established collaborations with Spanish and French researchers to improve the protocols for in vitro cultivation of date palm trees. This project will provide valuable scientific information, cultivation protocols and planting material for the activities of Component 3 of the LDCF project. These activities are related to the creation and rehabilitation of agropastoral plots. The LDCF project will enhance the resilience of the PDPD project to climate change by: i) increasing the productivity and rate of establishment of date palm trees as a result of improved access to

⁹ PRODERMO project document, 23 February 2011.

¹⁰ Projet de Développement des Palmiers Dattiers.

¹¹ The process of acclimating laboratory-grown seedlings for transplanting into the field.

irrigation; and ii) increasing national knowledge and technical capacity for the sustainable cultivation of date palm trees in rural areas.

22. The UNEP-IUCN-WAMIP project on **Enhancing the awareness and knowledge of pastoralism** (US\$ 270,000) seeks to: i) increase knowledge on pastoralism as a terrestrial ecosystems land management option; ii) contribute to long-term and adaptive management of landscapes in Africa, Asia, Europe, and South America that are vulnerable to climate change; and iii) raise the political attention around pastoralism as a valued land management option. It also aims to prepare policy frameworks for technical and advisory support to countries on including pastoralism in design, planning and implementation of land-use management based on an ecosystem approach and national Green Economy agendas. The project has a strong focus on sustainable and climate-resilient livelihoods. The LDCF project will build on the UNEP-IUCN-WAMIP by: i) providing scientifically rigorous information to guide the development of pastoral activities in Hanlé and Tadjourah, including consideration of climate change effects; ii) increasing the resilience of pastoral rangelands to climate change effects by reducing unsustainable management practices and providing alternative livelihood options; and iii) increasing local and national capacity to implement sustainable and climate-resilient agropastoral practices.

23. The UNEP preparatory project for **Using Ecosystem-based Adaptation (EbA) for Food Security in agriculture-dominated landscapes in Africa (EbAFoS)** (US\$ 600,000) focuses on building ecological resilience of food systems and enhancing food security through Ecosystem-based Adaptation (EbA) approaches in countries in Sub-Saharan Africa. Among expected outcomes, the activities will start bridging the gap between science and policy that currently exists by gathering evidence from the demonstration of EbA approaches for food security. This evidence can be applied to the proposed LDCF project. The LDCF project will build on the UNEP EbAFoS project by: i) reducing food insecurity in Hanlé and Tadjourah through the establishment and demarcation of sustainable, productive agropastoral plots, including the provision of appropriate agricultural inputs and infrastructure to supply and store water; ii) increasing resilience of ecosystems to climate change effects through reducing unsustainable management practices and providing alternative livelihood options; and iii) increased knowledge and technical capacity at national and local levels to plan and implement locally appropriate and cost-effective adaptation measures, including both EbA and hard engineering approaches.

24. The UNEP-European Commission ENTRP project on **Building Capacity for Coastal Ecosystem-based Adaptation in Small Island Developing States (SIDS)** (US\$ 500,000) will assist countries and regions to develop and apply EbA approaches to maintain and enhance the resilience of tropical coastal ecosystems and the services they provide to coastal communities in SIDS. Although the project's geographical focus is on SIDS in Africa and the Caribbean, the project will contribute parallel co-financing through some of the planning and ecosystem management tools and technical guidance to assist decision making. It will also contribute through regional capacity building and global transfer of good practices and experiences gained, particularly with regards to mangrove management. The LDCF project will build on the UNEP-European Commission ENTRP project by: i) increasing resilience of EbA activities to climate change-related hazards as a result of the introduction of complementary hard engineered adaptation measures such as gabion walls; and ii) increasing knowledge and technical capacity at national and local levels to plan and implement locally appropriate and cost-effective adaptation measures, including both EbA and hard engineering approaches.

A. 5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

25. The overarching goal of this second LDCF project in Djibouti is to increase the resilience of the Djiboutian society and economy to the effects of climate change and enhance the capacity of the government to integrate adaptation into its development planning. The objective of the project is to implement climate change adaptation interventions that protect human populations, maintain productive assets and enhance ecosystem resilience in the

regions of Hanlé and Tadjourah¹². The project activities will focus on the most vulnerable communities in these two regions (see Annex O for a summary of the baseline and alternative scenario for each component).

26. The proposed activities of the LDCF project have been developed through extensive consultations with national and multilateral stakeholders. Consultations included, *inter alia*; i) the inception workshop (May 2013); ii) the validation workshop (August 2013); and iii) multiple meetings with individual stakeholders. The purpose of the stakeholder consultations was to: i) identify appropriate interventions and intervention sites based on the vulnerabilities and needs of local communities; and ii) identify government departments, agencies and ongoing projects relevant to the LDCF project activities (see Appendices 11, 12 and 13 of the Project Document). Additionally, two national consultants conducted several field missions to meet with communities in the project intervention areas to identify priority interventions and potential beneficiaries of the LDCF project. For example, the national consultants met the farmers of the agropastoral plots in Kouidi Koma and Liliya bouri to identify the factors which limit the productivity of agropastoral plots (see Appendix 14 of the Project Document). National consultants also undertook assessments of water availability and proposed measures to increase water availability (see Appendix 15 of the Project Document). All missions to the intervention sites were conducted with the Directory of the MHUE. As a result, the proposed activities of the LDCF project are well aligned with needs identified by stakeholders and project beneficiaries. This approach will promote buy-in and participation of all project stakeholders, thereby supporting the sustainability of the project interventions. The same approach of participatory consultation will be maintained for the duration of the project implementation period. Relevant stakeholders will be consulted regularly, particularly in decisions related to the implementation of concrete, on-the-ground interventions. This approach will encourage participating communities to have a sense of ownership of the LDCF project's investments.

27. The sustainability of the project interventions will be further strengthened through several other measures. Firstly, the capacity of relevant line ministries and local communities will be increased by providing training on climate change adaptation (see Activity 4.1.2 and 4.1.3). This training will enable the government of Djibouti to plan and implement future adaptation programmes thereby increasing the capacity of stakeholders. Furthermore, training and capacity building of local communities will support them to initiate their own small-scale adaptation interventions, such as EbA measures and development of alternative livelihoods. The sustainability of the project's interventions will also be supported by undertaking a comprehensive study to assess potential sources of finance – including provision of microloans – and identify opportunities to fund the replication and upscaling of successful project activities by local communities. The financial assessment study may also include assessments of the potential for microfinance loans to support interventions which could not be included within the LDCF project. For example, the study will assess the potential for local communities to use microfinance loans to market and transport goods produced through agropastoral plots. Details which will be investigated by the financial assessment study will include *inter alia*: i) availability of collateral to access loans; ii) detailed cash flow analyses for various project interventions; iii) calculations of return on investment and payback period; iv) capacity of different micro-finance institutions (MFIs) to provide interest rates that would promote specific interventions; v) potential size of the market (to incentivise MFIs); and vi) financial literacy and capacity of farmers to manage their businesses and pay back loans. Secondly, an upscaling strategy for the project interventions will be developed (Activities 4.1.2 and 4.1.4) by the project. This strategy will advocate sustained government investments in project activities beyond the project implementation period. Thirdly, economic opportunities to develop value chains will be investigated and the commercial viability of a range of alternative livelihoods will be analysed (Activity 3.1.12 and 3.2.4). This will include an assessment of potential opportunities to encourage private sector participation in the the development of alternative livelihoods. Several research projects will also be conducted to assess the mid- and long-term economic costs and benefits of project interventions (Activity 4.1.1). These economic analyses will leave a legacy of credible information that can be used by the private sector to take investment decisions and establish profitable businesses based on project interventions. This will promote the project interventions beyond the lifespan of the project. Finally, PhD and Masters students will provide rigorous scientific results on the effects of project interventions on the resilience of local livelihoods.

28. The project will prioritise the appointment of national consultants wherever possible in order to support the development of national capacity. International consultants will be appointed only where local expertise is limited. In

¹² LDCF project objective as described in the PIF.
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such cases, national and international consultants will work together to develop national expertise in EbA and promote the sustainability of project activities.

29. The project design is aligned with the INDS and NAPA priorities. This increases the likelihood of the project interventions being upscaled by the Government of Djibouti to other areas. In addition, the cost-effectiveness of the proposed interventions as well as the buy-in of local communities will encourage the government to include EbA in national development planning.

30. The proposed LDCF project will use a combination of Ecosystem-based Adaptation (EbA) and hard infrastructure interventions supported by institutional and capacity development activities to reduce the climate vulnerability of local communities in the two intervention sites. UNEP defines EbA as “the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people and communities adapt to the negative effects of climate change at local, national, regional and global levels”¹³. The project will enhance delivery of ecosystem goods and services under conditions of climate change by: i) restoring degraded *Acacia* woodlands and mangroves; ii) using hard infrastructure to combat droughts and floods; and iii) establishing agropastoral plots to increase agricultural productivity and diversify livelihoods. Sources of finance to support and develop agropastoral value chains will be identified. The sustainability of the proposed LDCF project will be supported by training local communities on EbA and agropastoralism and encouraging ownership of the project’s interventions by stakeholders. The project will also introduce a diverse range of adaptation technologies including inter alia: i) hard infrastructure such as gabion walls and levees to reduce the severity of flooding; ii) installation and rehabilitation of boreholes, including solar-powered borehole pumps; iii) rainwater harvesting techniques such as straw mulching, Zai and contouring; iv) improved climate-resilient agricultural techniques such as drip irrigation and distribution of comprehensive packages of high-quality farmer input kits; and v) climate-resilient alternative livelihoods such as apiculture, aviculture and marketing of crafts. These project interventions are a hybrid approach to climate change adaptation, which includes both the Ecosystem Based Adaptation approach promoted by UNEP combined with a conventional infrastructure-based approach to reducing vulnerability to climate-related hazards. Previous assessments of projects which have implemented climate change adaptation activities using this hybrid approach have demonstrated the cost-effectiveness of combining EbA measures with ‘hard’ engineering interventions¹⁴ (detailed further in Section B.3).

31. The capacity for Djibouti to upscale EbA and other climate change adaptation interventions will be enhanced by: i) conducting research to assess mid- and long-term benefits of the project interventions; ii) training policymakers in relevant government ministries to integrate EbA into development planning; iii) implementing a campaign to increase public awareness of school children on climate change; and iv) developing support systems to provide information on and promote EbA.

32. The abovementioned activities will achieve the following outcomes:

- reduced or averted negative impacts of droughts and floods;
- increased productivity and climate-resilience of ecosystems;
- diversified livelihoods that are sustainable, climate-resilient and contribute to maintenance of ecosystem services; and
- increased capacity of institutions and communities to proactively adapt to climate change.

Outcome 1. The negative impacts of droughts and floods are reduced or averted.

33. The LDCF resources will be used to implement EbA (Component 2) and construct hard infrastructures (Component 1) to increase the resilience of local communities to climate-related hazards – particularly droughts and

¹³ Travers et al. 2012. Ecosystem-Based Adaptation Guidance: Moving from Principles to Practice. UNEP Working Document.

¹⁴ SPREP, 2013. Rao N.S., Carruthers T.J.B., Anderson P., Sivo L., Saxby T., Durbin, T., Jungblut V., Hills T., Chape S. 2013. An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands. A technical report by the Secretariat of the Pacific Regional Environment Programme. Apia, Samoa

floods. The first component of the project will focus on increasing the resilience of communities in Hanlé and Tadjourah. Levees and gabion walls will be built to provide a physical barrier that will slow water flow and reduce the impact of floods in the project areas¹⁵. Six gabion walls will be built in wadis around Tadjourah Ville (four wadis) and Hanlé (two wadis). The location of these gabion walls will be selected based on an assessment of vulnerability of nearby urban areas to floods. The vulnerability to floods of communities in Tadjourah Ville will be further reduced through the rehabilitation of an existing sand levee in the Marsaki wadi. The project will also reduce the vulnerability to floods of agropastoral households in Hanlé by building gabion walls in three additional wadis.

34. The availability of fresh water in Djibouti is currently insufficient to meet local demands¹⁶, including within the project areas of Hanlé and Tadjourah (see section 2 of the Project Document). This is partly a result of the limited availability of data on ground and surface water to support the development of Djibouti's water resources. To address this challenge, extensive studies of water resources will be conducted prior to the construction of hard infrastructure for water management. These studies will include assessments of water availability, water quality and sustainable water use rates under current conditions as well as under future predicted climate change scenarios. Water quality parameters will be an important component of these water resources assessments of water resources because the quality of groundwater quality is frequently poor within the project areas. For example, groundwater is abundant in Hanlé but the measured concentration of fluoride is too high for human consumption at several sites (>3 mg per litre). Similarly, in Tadjourah, groundwater is often brackish and has a high concentration of salt as a result of sea water intrusion. Information generated by the hydrological studies will be used to guide the identification of appropriate activities and project sites in Output 1.1. These studies will be used to guide the construction of four boreholes, six reservoirs and approximately 20 gabion walls in order to increase the availability of fresh water. As a result, the project will increase the resilience of local communities to drought.

35. LDCF resources will also be used to conduct pedological studies to support the selection of appropriate sites for the construction and rehabilitation of the agropastoral plots in Hanlé and Tadjourah. A pedological profile will be established for each of the sites identified during the PPG phase as potential intervention sites for Component 3 of the proposed project. This profile will be established through physical and chemical analyses of soil samples, including analysis of physical texture and composition, water holding capacity and fertility. These studies will support the selection of appropriate species for cultivation in agropastoral plots as well as guiding the selection of appropriate intervention sites for the activities of Component 3.

Baseline situation (without LDCF project)

36. *Water availability:* Several studies indicate that the climate resilience of rural and urban communities in Djibouti would be increased through measures which increase the availability of water. These studies include: i) the "Master Plan for Agriculture" report which emphasises the need to develop water access projects; ii) the evaluation report for the Mobilisation of Water for Household and Agricultural Use Project¹⁷ which highlights the need for increased water availability for the development of agricultural activities; and iii) scientific studies conducted by CERD that demonstrate the deficit between water availability and demand. During consultations, stakeholders frequently requested that resources be allocated to increase water availability. These consultations also identified the need for improved management of water resources in the agricultural sector.

37. There are an insufficient number of boreholes, dams and reservoirs to adequately distribute water resources in Hanlé¹⁸ and Tadjourah¹⁹. Furthermore, the existing infrastructure is often inappropriate for local community circumstances. For example, many borehole pumps are powered by diesel generators – including at Kouidi Koma and Deralwa in Hanlé and are not operational during periods when local communities cannot afford to purchase fuel. In certain instances, borehole pumps are too small to deliver adequate volumes of water to meet the needs of local communities. For example, in Kouidi Koma the existing solar-powered borehole pump is inadequate for irrigating the

¹⁵ Details of these technologies are provided in Appendix 17.

¹⁶ Daily water requirements are estimated to be 28 litres per person per day.

¹⁷ Mobilisation des eaux à usage domestique et agricole

¹⁸ There are 23 boreholes in the region of Dikhil, including 15 equipped with solar panels.

¹⁹ There are 15 boreholes in Tadjourah, including six equipped with solar panels.

8 ha of agricultural land for which it was established. Therefore, most of the existing infrastructure for water delivery in the intervention sites requires improvement. This challenge is exacerbated by the limited capacity of local communities to operate and maintain borehole equipment. The lack of detailed information on groundwater location, quantity and quality is an additional challenge to the development of water resources, particularly in Hanlé. In the case of Tadjourah and Marsaki Wadi, there is some existing information on water resources as the DRH has recently conducted extensive groundwater studies in these locations.

Adaptation alternative (with LDCF project)

38. Output 1.1 is focused on building hard infrastructure to reduce the negative effects of floods and droughts on local communities in Hanlé and Tadjourah. The activities of this output will include: i) the construction of levees and gabion walls to decrease vulnerability to floods; and ii) the construction of boreholes and water-reservoirs to increase the availability of water for drinking and irrigation. In addition, LDCF resources will be used to rehabilitate, with gabions, the sand levee in the Marsaki Wadi. An Environmental Impact Assessment (EIA) should be conducted prior to all physical interventions as required by the National Law on Environment²⁰. Hence, the LDCF resources will be used to contract a national company which is experienced in conducting EIAs. The contracted company will investigate the potential environmental effects of each of the project activities, such as the potential effects of the infrastructure and EbA interventions on water flow and sedimentation downstream.

39. The project will increase the availability of water for agriculture and domestic use through the construction of four boreholes. Three boreholes will be constructed to increase water availability for domestic use in Tadjourah Ville and one borehole will be constructed for the irrigation of agropastoral plots (established under Component 3). The project will also rehabilitate two boreholes in Hanlé to support the irrigation of agropastoral plots. Two boreholes in Tadjourah will be constructed by the PRODERMO baseline project²¹. These boreholes were initially designed to meet local communities' needs. Hence, solar panels may need to be added to the power system of the two PRODERMO boreholes if they are not powerful enough to meet both local domestic needs and the irrigation needs from the LDCF project's investments. Additionally, the LDCF resources will be used to install water distribution systems from these boreholes to the corresponding agropastoral plots established under Component 3. Further information on the engineering requirements and design of the water supply to the AAPs will be obtained after: i) the hydrological studies for the construction of these two boreholes have been conducted; and ii) the pumping system design has been selected by PRODERMO. The location of the hard infrastructure built by the proposed LDCF project will be based on the results of the hydrogeological studies undertaken in Activity

40. Output 1.1 will generate multiple socio-economic benefits including *inter alia*: i) increased availability and quality of water for domestic use and irrigated agriculture; ii) reduced damage and economic losses resulting from floods; and iii) increased resilience of agriculture to droughts. The activities under Component 2 and 3 will complement this output by increasing ground water recharge through ecosystem restoration and the use of rainwater harvesting technologies such as *Zai*, contoured earthen bunds and ridged contours.

41. Solar power is not always efficient because of annual variability in solar radiation. Hence, the solar power boreholes presently used at the proposed LDCF project's intervention sites sometimes fail to pump enough water to meet water needs. Additionally, solar panels only work during daylight and batteries are very costly. Hence, the LDCF resources will be used to fund a technical feasibility study on the combined use of solar and wind energy. If the underground water resource is sufficient, this system would enable the pumping to occur 24 hours per day.

42. At present, there is insufficient hydrogeological data to guide the development of water resource management in Hanlé. Therefore, this output will undertake detailed hydrological studies in Hanlé to provide information on: i) quality, quantity and location of groundwater location; and ii) the efficiency of the water distribution system. These studies will include an assessment of water quality in the project areas as water quality is likely to be poor at some of the project sites²². For example, groundwater is abundant in Hanlé but the concentration of fluoride is too high for

²⁰ Loi Cadre sur l'Environnement, 2000, n°106/AN/00/4ème L.

²¹ PRODERMO project will fund the construction of 2 boreholes, one in Darkenlé and one in Rouelli.

²² An estimate of 5 litres of water per person per day is used for ablutions. An estimate of 250 litres per day per mosque could be reused.

human consumption (>3 mg per litre). In Tadjourah, groundwater is often brackish and has a high concentration of salt as a result of sea water intrusion. Information generated by the hydrological studies in Output 1.2 will guide the development of activities in Output 1.1.

43. LDCF resources will be used to procure hydrological monitoring equipment to increase the availability of information related to water resources. Equipment to be procured will include a limnigraph to measure the depth of surface water and a pluviograph to measure rainfall. Appropriate locations for the establishment of the hydrological monitoring equipment will be determined by the results of the hydrological studies.

44. Recycling and reuse of grey water is not commonly practiced in Djibouti. Therefore, a pilot study will be undertaken to investigate the potential to irrigate urban gardens in Tadjourah Ville using recycled grey water. Mosques' wastewater has been chosen for this experiment because a large quantity of water is rejected every day from ablutions²³. This water is still relatively clear. Its reuse is unlikely to present any ethical problem. This water reuse system could be upscaled to other appropriate buildings - in Djibouti and neighbouring countries - if successful.

Outcome 2. Fragile ecosystems are productive and resilient to climate change

45. The second component of the LDCF project will complement the hard infrastructure built under Component 1. The objective of this component is to reduce the vulnerability of local communities to climate-related hazards through the strategic restoration of degraded ecosystems that will provide a buffer against the negative effects of climate change. Under this component, *Acacia* woodlands in Hanlé and Tadjourah as well as mangrove areas in Tadjourah will be restored by planting climate-resilient tree and mangrove species.

46. The two main causes of degradation of *Acacia* woodlands are drought and invasion by *Proposis*. Hence, RWT will be implemented in the identified restoration sites prior to the planting activities and *Prosopis* will be removed when present in the identified restoration sites. The restoration of these degraded areas will increase ecosystem resilience to erosion and desertification. Additionally, the restoration of degraded sites will increase soil fertility and improve physical structure of soils.

47. The LDCF resources will also be used to restore and protect mangroves in the region of Kalaf. Mangroves were present in the region a few decades ago, however at present there are virtually no remaining intact mangroves. The project will introduce several small mangrove nurseries and provide training and capacity-building to support local communities to undertake mangrove replanting. In addition to replanting mangrove areas, the project will also introduce protection measures to exclude livestock from the restoration areas. If the replanting activities are successful (i.e. high survivorship of planted seedlings), mangrove replanting in Kalaf will be promoted during subsequent workshops, training and awareness-raising campaigns at local (Output 2.2) and national levels (Outputs 4.1 and 4.2).

Baseline situation (without LDCF project)

48. Djibouti's ecosystems are extremely degraded because of multiple causes including overgrazing by livestock, inappropriate agricultural practices and deforestation woodfuels such as charcoal and firewood. Degradation of ecosystems such as mangroves and *Acacia* woodlands results in negative effects such as increased soil erosion, desertification, sedimentation of surface waters and invasion by alien plant species. The observed consequences of desertification include a reduction in species diversity and plant biomass as well as a reduction in the overall productivity of the dryland ecosystems. Efforts to conserve and restore degraded ecosystems are undermined by ongoing degradation and encroachment of activities such as livestock grazing, agricultural expansion, woodfuel collection, and deposition of pollutants such as litter and sediment. Furthermore, as a result of the limited investments in conservation and restoration of ecosystems, there is a lack of data to guide the development of appropriate interventions in specific ecosystems. For example, as a result of the virtual disappearance of mangroves from Djibouti's shorelines within the last 2-3 decades, there is very little information available to identify suitable sites for mangrove restoration.

²³ An estimate of 5 litres of water per person per day is used for ablutions. An estimate of 250 litres per day per mosque could be reused.

Adaptation alternative (with LDCF project)

49. This output focuses on the reforestation of degraded wadi banks and plains in Hanlé and Tadjourah using climate-resilient, non-invasive tree species that are adapted to the local environment. The selection of species to be planted for the restoration of *Acacia* woodlands restoration will be based on characteristics such as tolerance to water-logged conditions, drought and excessive salt concentration in soils. Indigenous tree species will be prioritised over exotic species in order to avoid unintended negative effects on biodiversity as a result of the project. However, exotic species, which are assessed as unlikely to become invasive in the local environment should still be considered for inclusion in reforestation activities. Plants to be considered include *Acacia* species (e.g. *Acacia tortilis*, *A. asak*, *A. eheinbergiana*, *A. nilotica*), other tree species (e.g. *Salvadora persica*, *Cadaba rotundifolia*), and grasses such as *Sporobolus helvolus*. The restoration of the degraded *Acacia* woodlands will result in increased water infiltration into soil profiles, reduced flow of floods and reduced soil erosion. The physical restoration activities will be complemented by educating local communities on the potential to reduce their climate change vulnerability through EbA. A list of potential plant species to be included in reforestation activities and their attributes is presented in Appendix 9 of the Project Document.

50. Degraded mangrove areas will be restored as well to create buffer zones that will protect coastal communities from erosion, storm surges and sea level rise. This output focuses on the restoration of degraded mangrove areas to create buffer zones that will protect coastal communities from erosion, storm surges and sea level rise. Currently, there are no remaining mangroves in Tadjourah as a result of degradation by camel grazing, tree cutting and sedimentation²⁴. A restoration project was undertaken approximately a decade ago in this location but was undermined as a result of damage by grazing camels. The LDCF project will consequently undertake restoration of at least 10 ha of degraded mangroves in Kalaf in Tadjourah. The restoration of mangroves areas will include measures to prepare the sites for replanting, including light dredging of sediment from tidal canals as well as removal of deadwood, solid waste and other litter from the restoration areas. The recovery of restored mangroves will be further promoted by enclosing the planting areas with fences to exclude grazing livestock. Local communities will be provided with training to collect and propagate mangrove seeds. This will include the establishment of six mangrove seedling nurseries in the vicinity of the proposed restoration sites. These activities will be supported by a campaign that will increase the awareness of local communities of the potential to reduce their vulnerability to climate-related hazards through the restoration of degraded mangrove areas.

²⁴PERSGA, 2004. Status of mangroves in the Red Sea and Gulf of Aden, PERSGA Technical Series 11.
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Outcome 3: Livelihoods that are sustainable, climate-resilient and contribute to maintaining ecosystem services.

51. Component 3 will increase the climate resilience of livelihoods practiced by communities in the project areas through two complementary approaches, namely: i) integrating climate-resilient techniques into traditional livelihood practices; and ii) introducing climate-resilient alternative livelihoods. The climate-resilient livelihood practices that will be developed in Component 3 (i.e. agropastoralism, apiculture, aviculture and handcraft) will be complemented by a public awareness campaign on the benefits of these alternative livelihood practices. Diversification of livelihoods will increase the resilience of the local communities by reducing reliance on a narrow range of resources such as pasture lands. Consequently, this diversification will decrease poverty and food insecurity. The project will also support the diversification of livelihoods by generating a detailed assessment of options for financing alternative livelihood options, including through increasing access to microloan finance for specific sectors.

52. Production of fodder plants and crop plants will be intensified at the project's intervention sites under this component. This intensification will be partly achieved by supporting farmers to purchase and implement comprehensive farmer packages²⁵ – built around state-of-the-art drip irrigation technologies – that generate sustainable agri-businesses. These packages will include high-quality agricultural inputs, equipment, agricultural extension support, microfinance loans, financial training, and insurance against extreme weather events. The adaptation rationale underpinning this intervention with farmer packages is: i) drip irrigation will conserve water supplies to manage increasing frequencies of drought and rates of evaporation; ii) hybrid seeds – selected according to the specific climatic conditions of a site – will be used to track changes in climate through time; iii) appropriate pesticides will be applied to specific pests and diseases that are spreading as a result of climate change; iv) insurance will protect farmers against flooding and wind damage; and v) agricultural extension support will focus on climate-smart agricultural techniques. The farmer packages will be designed such that the capital investment can be repaid to the bank or microfinance institution over a period of 3 years. The sustainability of the LDCF investment – in the form of profitable small enterprises – will consequently be evident before the end of the project.

53. Gender considerations will be a strong focus of all activities in this component. Two livelihoods, namely aviculture and handcraft, have been shown to be particularly successful in Djibouti when managed by women. The LDCF resources will consequently be used to train women in the development of those livelihoods in the project areas. In so doing, the project will contribute to improving the quality of life for women in rural areas of Djibouti (see Section 3.11).

Baseline situation (without LDCF project)

54. *Agropastoralism:* Pastoralism is a traditional livelihood in Djibouti. However, the increased frequency and severity of drought has led to the loss of a large proportion of Djibouti's national livestock herd, particularly in Hanlé. As a result, crop cultivation is increasingly being adopted by rural communities. The MAPE-RH is involved in multiple initiatives to promote food security with the support of various partners. For example, in Hanlé, the FAO has funded the development of several agropastoral plots. Similar agropastoral plots have been established in Tadjourah, such as in Kalaf. In both Hanlé and Tadjourah, the main factor constraining the success and expansion of agropastoralism is the limited technical capacity and knowledge of the local communities. Various national initiatives are promoting the use of drought- and salt-resilient plant species in agricultural areas. For example, CERD is currently implementing a project to increase the propagation of date palm trees through asexual propagation using tissue culture techniques (see the "Baseline projects" in section 2.6 of the Project Document).

55. *Livelihoods:* Poverty in Djibouti is closely linked to the few options in terms of livelihoods. This constraint is partially a result of a general lack of technical knowledge and capital. However, several initiatives such as the aforementioned FAO project have recently introduced new livelihoods such as aviculture. The success of these activities cannot yet be measured because they have only recently been adopted. Impoverished rural communities generally have limited access to finance opportunities. As a result, households are unable to invest in opportunities which will diversify livelihoods and increase household income, such as in the development of a business or purchasing high quality agricultural inputs. Consequently, the majority of rural populations are reliant on natural

²⁵ See for example the Amiran Farmer's Kit at www.amirankenya.com and <http://www.amirankenya.com/poster2.pdf>.
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resource-based livelihoods such as agriculture and pastoralism and do not have the capacity or resources to develop alternatives.

Adaptation alternative (with LDCF project)

56. This output focuses on increasing the climate resilience of rural communities in Hanlé and Tadjourah by diversifying and increasing their income streams. Firstly, their main economic activity, pastoralism, will be strengthened by establishing large agricultural plots (i.e. 10 ha) that will provide each family with half a hectare of highly productive land for fodder production. Secondly, local community livelihoods will be climate-proofed by planting a wide range of plant species that are resilient to drought and salt tolerant. Three categories of climate-resilient species will be planted: i) diverse vegetable and fruit crops (e.g. onions, carrots, beetroots, red peppers, chili, melon); ii) fodder species (i.e. *Panicum* spp., *Chloris* spp., *Crotalaria* spp., *Poaceae* spp. and *Macroptilium*); and iii) fruit trees (i.e. guava *Psidium* spp., date palm *Phoenix dactylifera*, mango *Mangifera* spp.). Additionally, the perimeter of these plots will be planted with trees providing shade, protection against wind and NTFPs. These trees include Nile tamarisk (*Tamarix nilotica*) and neem (*Azadirachta indica*). Training on the use of rainwater harvesting technologies to increase water infiltration surrounding the agropastoral plots will also be undertaken. An example of an agropastoral plot to be established using LDCF resources is presented in Appendix 12. Such plots will greatly increase the food security of rural communities at the project sites.

57. The combination of several new economic opportunities – relating to livestock, crops, fodder and NTFP commercialisation from agropastoral plots – will assist local communities in being more sedentary as opposed to relying on nomadic pastoralism. This is seen as advantageous by the local communities. Two types of training will be provided to the agropastoralists: i) training of trainers will be conducted in demonstration agropastoral plots²⁶; and ii) a learning-by-doing campaign will be conducted using the agropastoral plots with support from the trainers. Additionally, options for increasing access to finance from local banks and microfinance institutions will be investigated by a finance specialist. Microfinance loans will, for example, facilitate the investment of local communities in marketing and transport of the goods produced through their agropastoral plots.

58. Additionally to the construction and restoration of large agropastoral plots, the LDCF resources will be used to support the agropastoralists outside of the LDCF-funded plots. Indeed, microloans opportunities to purchase comprehensive farmer's packages will be investigated. The LDCF project will use the protocols and results of the CPEC and AF projects to develop sustainable microfinance options which are appropriate to the intervention sites. Institutions and stakeholders with experience related to development of microfinance options in rural areas, including the Agriculture and Agro-Industries Department' (OSAN) of the AfDB, will be consulted during the design of LDCF microfinance activities. The project will also undertake a campaign to increase awareness of the potential to support the development of sustainable livelihoods for agropastoralists by increasing access to microfinance. Stakeholders to be targeted by this campaign will include commercial banks, bureaux de change, insurance companies and other microfinance institutions. The LDCF project will increase the capacity of pastoralists to access microfinance through sedentarisation and development of micro-credit opportunities in the agriculture and pastoralism sectors. Local banks or microfinance institutions will be incentivised to provide loans to an estimate of 15 farming families per project areas. Such incentives could include risk-sharing facilities and/or subsidising the purchase price. Each of the farmer's packages will include: i) high-quality inputs of a portable plastic greenhouse, appropriate drip irrigation piping, hybrid seeds selected for the specific climatic conditions of the intervention site, slow-release fertilizers, appropriate pesticides for the pests and diseases that are likely to proliferate under climate change conditions, and a sterile growing medium chosen for the specific crops being grown; ii) agricultural extension support to train the farmers on how to use the equipment and grow the crops; iii) finance from local banks and/or microfinance institutions to facilitate purchases of the farmers' packages in the community; iv) financial and business training to manage cash flow and the loans; and iv) insurance to protect against extreme weather events. This financial investment of the farmers will ensure that drip irrigation equipment is used to develop a business with appropriate financial accounting systems and business structures in place to ensure its profitability and thus sustainability beyond the termination of the LDCF project. Furthermore, financial and business training will be provided to develop a spirit of entrepreneurship will be inculcated into the project beneficiaries under this activity.

²⁶ Demonstration agropastoral plots used in the training will be selected according to their productivity and the diversity of plant species cultivated.

59. The LDCF resources will also be used to train farmers in traditional agropastoral plots²⁷ on climate-resilient agropastoral practices and the use of rainwater harvesting techniques will be provided to enable at least 30 families using these traditional systems to increase the climate resilience of their livelihoods. Additionally, state-of-the-art drip-irrigation systems appropriate for small-scale agricultural areas will be provided to optimise the use of water resource for their irrigation.

60. The activities of this output will increase the range of opportunities local communities have to meet their food needs and generate income. Economic activities in the rural areas of Hanlé and Tadjourah are mostly limited to pastoralism. The recent drought events have resulted in considerable livestock loss to pastoralists. Some pastoralists have changed their livelihoods to charcoal production using *Prosopis*. However, this activity threatens indigenous tree species as it promotes the planting of *Prosopis* species, which is an alien invasive species. Stakeholder consultations have shown that there is a will to change from charcoal production to agropastoral activities if the opportunity arises. As a result, the LDCF resources will be used to propose to local communities alternative livelihoods to charcoal and pastoralism that are major causes of ecosystem degradation in the project areas.

61. Apiculture has already been introduced in an agropastoral plot in Hanlé. There are two hives and another two are planned. No honey has been collected yet because they do not have the protective clothing. The LDCF resources will be used to provide three hives in each of the six agropastoral plots to introduced this economic activity. The planting of *Acacia mellifera* and *Acacia nilotica* which provide pollen for bees will be promoted in the surrounding areas.

62. Aviculture has already been successfully introduced in the Barah area. This activity has focused on women who were given chickens from Ethiopia that are adapted to local conditions (including tolerance to heat and resilience to common pests and diseases of domestic fowls). Consuming chicken and eggs is not part of Djiboutian culture. However, the effects of climate change have raised the willingness of local communities to adopt new economic activities. Accordingly, aviculture activities will be introduced in the six agropastoral plots of the project. Material and training will be provided to support local communities with the development of this new activity.

63. Handicraft is practiced by women in both Hanlé and Tadjourah. The Women Association of Tadjourah (AFT²⁸) creates different products from doum palm (*Hyphaene thebaica*) leaves such as mats, gifts and decorations. Those products are sold in several cities in the country including Djibouti Ville. The doum palm leaves come mostly from Hanlé where this type of craft is also practiced. Women in Hanlé make a narrower range of products restricted mainly to mats. This narrow range is a result of their limited technical knowledge. Similarly, they do not have the technical knowledge to produce a variety of pigments for the decoration of their product – in contrast to the women of the AFT. The LDCF resources will therefore be used to fund the training of 30 women of Hanlé by two women from the AFT or from another appropriate handicraft association.

Outcome 4: Increased capacity of institutions and communities to adapt to climate change

64. Component 4 of the LDCF project will complement the diverse economic activities that will be introduced or reinforced in Component 3. Accordingly, the primary focus of Component 4 is the development of the appropriate institutional and technical capacity for adapting Djibouti's agricultural and water sector to climate change at both the national scale and the local scale. At least 15 policy-makers will be trained to upscale nationally climate change considerations and include them into development planning. Additionally, at least 30 government representatives will be trained to implement EbA interventions including the restoring *Acacia* woodlands, replanting mangroves and construction climate resilient agropastoral plots. As a result, the LDCF resources will have long lasting effects on the Djibouti economy long after the termination of the project.

²⁷ Traditional agropastoral plots are agropastoral plots of 300 to 500 m² that rely on rainwater harvesting structures (e.g. wells) for irrigation. Hence, they differ from the LDCF-financed agropastoral plots of at least 8 ha and irrigated by a borehole (non-depending on rainwater harvesting)

²⁸ Association des femmes de Tadjourah

65. The activities of Component 4 at a national scale will include: i) improving coordination between the different implementation units within MHUE, MAPE-RH and project management teams supporting ongoing and future environmental projects in the country; and ii) providing support for the integration of climate-resilience and EbA into the country's development projects. The activities of the LDCF project at a local scale under this component include: i) increasing technical capacity through the dissemination of knowledge about climate change and the sustainable use of natural resources; and ii) increasing institutional capacity through the creation of local cooperatives and committees to promote, train and maintain the new climate resilient livelihoods developed.

Baseline situation (without LDCF project)

66. *Institutional and technical capacity:* There is limited synergy and coordination between the various ongoing environmental projects in Djibouti, which is partly attributable to a lack of knowledge-sharing systems. This prevents the upscaling of successful local efforts to regional and national scales. A CDNCC²⁹ was created in 1999 according to a presidential decree³⁰. However, regular meetings of this committee were not held. In 2004, another presidential order called for the creation of a CTDD³¹. The CTDD was led by the MHUE and comprised representatives of relevant ministries and other national organisations³². However, the CTDD did not meet regularly and did not make a significant improvement to the coordination of relevant initiatives.

67. *Early Warning Systems:* The NDRAMS project, implemented by CERD and funded by Global Facility For Disaster Reduction and Recovery (GFDRR), aims to reduce the vulnerability of Djibouti's communities to floods. This project was initiated in 2011 and was initially focused on Djibouti Ville. At present there are no EWSs in the LDCF project intervention sites, however, the second phase of the NDRAMS project will begin in January 2014 and will include activities in Tadjourah. The development of this EWS project will be guided by information sources such as the FEWS NET database, Meteosat, the WHYCOS and the Hydromet. The location of pilot EWS activities was prioritised according to vulnerability to floods and the size of the threatened population. For this reason no EWS has been planned for Hanlé as yet.

Adaptation alternative (with LDCF project)

68. An inter-ministerial Climate Change Committee (CCC) was created in 1999 by the Ministry of the Interior. In 2004, the CCC was included in a broader committee named the Sustainable Development Committee (see section 2.4). However, none of these committees have met on a regular basis. Consequently, the LDCF project will host an inter-ministerial workshop with the objective being to: i) supervise the activities related to climate change at the national scale; ii) provide a general orientation on the activities that should be implemented in the field of climate change; and iii) ensure the coordination of the institutional structures in charge of the problems related to climate change.

69. Numerous development projects are being conducted in Djibouti. The majority of those projects have the primary objective of increasing water availability and reducing poverty. However, the likelihood of meeting these goals is limited by minimal communication between the projects' implementation teams. Hence, the LDCF project will develop communication and knowledge sharing between the ongoing projects in related sectors such as water, agriculture, fisheries and environment. Additionally, technical capacity will be further increased through studying the activities' results on the resilience of local communities to climate change. This research will provide evidence-based knowledge to guide the replication and upscaling of project activities. This research project will be conducted by Djiboutian students (i.e. PhD and MSc students).

70. The LDCF project will further increase the technical capacity of the government to reduce population vulnerability to climate change through supporting the development of an EWS in Tadjourah. The World Bank has allocated funding through the GFDRR to increase Djibouti's resilience to extreme climate events. The CERD is responsible for using the funds to implement an EWS project in Djibouti. The first phase of the project started early in 2011 and will finish in December 2013. The first two years focused on implementing an EWS in Djibouti Ville. The second phase to begin in January 2014 will expand the EWS to the other areas that are particularly vulnerable to

²⁹ Comité Directeur National des Changements Climatiques.

³⁰ Order n°99-0277/PR/MATETA.

³¹ Comité Technique pour le Développement Durable.

³² Decree n°2004-0092/PR/MHUE.

floods. Tadjourah Ville is one of these areas where in July 2013 flooding washed away a school nearby Marsaki wadi. The LDCF project will contribute to the development of the EWS in Tadjourah Ville. It will achieve this by providing training on EWS data interpretation and corresponding decision-making to the risk management units established by the EWS project as well as the local associations identified by the NDRAMS.

71. The activities in this output will increase both institutional and technical capacity of local communities. The training provided in Output 3.1 will be further strengthened by the establishment of agropastoral management committees at the project sites that will further disseminate the knowledge on climate resilient agropastoral practices and support their application. Additionally, those committees will be responsible for ensuring the appropriate management of the water resources and maintenance of water pumping systems. These committees will also provide training for the maintenance of water pumping, storage and distribution equipment funded under Component 1. One committee will be established per agropastoral plot. In addition, agropastoral cooperatives will be established within the communities at each intervention site. These cooperatives will be provided with support to facilitate the marketing of agropastoral products. Furthermore, the establishment of cooperatives will allow agropastoralists to negotiate the procurement of goods and services – such as agricultural inputs and transport – at a more cost-effective rate.

72. During stakeholder consultations, the need for a means of transport of the agricultural products to cooperatives or cities was raised frequently. Hence, a financial/logistics expert will be contracted to investigate different options for agropastoralists to get their agricultural produce to market timeously.

73. LDCF resources will also be used to increase the capacity of MHUE to conduct public awareness campaigns on how climate change is affecting Djibouti. Additionally, school teachers will be trained on appropriate adaptation technologies for managing climate change effects in Djibouti. The teachers will be encouraged to transfer this information to their students. This activity will be implemented in collaboration with the Centre of Research, Information and Production of the National Education ministry (CRIPEN³³).

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

	Description of risk	Potential consequences	Mitigation measures/ management response	Risk category	Probability & impact (1–5)
I	Disruption of project implementation by extreme climate events, e.g. floods.	Economic loss or physical damage to infrastructure is a challenge to the timely implementation of project activities.	<ul style="list-style-type: none"> • A baseline project will implement an EWS in the intervention sites. • Meteorological predictions will be taken into account during the planning of critical construction phases of hard infrastructure and agropastoral plots. • Intervention sites will be planned to minimise flooding threat to materials and equipment. 	Economic	P=2 I=4

³³ Centre de Recherche, Information et Production de l'Éducation Nationale.
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2	Insufficient surface water availability, groundwater availability and rate of groundwater recharge to meet local demand.	The project is unable to address communities' water requirements in Hanlé and Tadjourah.	<ul style="list-style-type: none"> All available information on surface water and groundwater will be collated and project activities will be adapted if necessary. For example, water treatment and recycling may need to be prioritised over borehole construction. 	Social, environmental	P=3 I=3
3	Vandalisation or theft of infrastructure such as pumps and solar panels.	Project activities are delayed. Additional finance is required to repair/replace equipment, and budget allocation to other activities is reduced.	<ul style="list-style-type: none"> Equipment and infrastructure installations will be fenced and permanently fixed in place with cement. 	Economic	P=2 I=2
4	Limited support or buy-in from local communities for sustainable resource management practices.	Unsustainable use of natural resources continues, leading to further degradation of ecosystems. Productivity of agropastoral plots is not sustained in the long term.	<ul style="list-style-type: none"> Public awareness campaigns and cooperatives will demonstrate the benefits of sustainable natural resource management and facilitate the adoption of the introduced practices. 	Social, environmental	P=1 I=4
5	Limited institutional capacity of the government as a result of existing commitments to related ongoing initiatives.	Project activities are delayed as a result of other government engagements. Effectiveness of project management is reduced.	<ul style="list-style-type: none"> The roles and responsibilities of each participating government institution will be agreed upon by institutional representatives at the validation meeting. The CTA will provide substantial support to the project manager. This will include two to three field visits per year by the CTA to ensure that the project workplan is applied. 	Institutional	P=4 I=3
6	Insufficient national financial resources to maintain project interventions in the long-term.	Project interventions such as hard infrastructure, irrigation systems, agropastoral plots and restored ecosystems are not maintained.	<ul style="list-style-type: none"> Local communities will be trained in maintaining agropastoral plots, irrigation systems and other interventions. Ecotourism will be promoted to increase the economic value derived from natural ecosystems and to provide incentives to fund their protection and maintenance. 	Economic	P=3 I=4

7	Limited technical capacity to conduct preliminary studies and design the implementation of activities.	CERD is unable to complete preliminary studies, resulting in delayed implementation of project activities. Adaptation interventions are not designed appropriately.	<ul style="list-style-type: none"> • The project budget for the preliminary studies will include funds to hire international consultants to complement the CERD research team. • The CTA will provide an up-to-date literature review on the activities planned. 	Technical	P=3 I=3
8	Baseline project activities not achieved as planned.	LDCF project activities are compromised as a result of a lack of existing interventions upon which to build.	<ul style="list-style-type: none"> • To ensure that they succeed, the project will allocate additional resources to the affected activities. 	Economic	P=3 I=3
9	Climate change adaptation priorities undermined by national emergencies or civil unrest.	Project activities are interrupted. Infrastructure is damaged or lost.	<ul style="list-style-type: none"> • The project manager and CTA will keep abreast of national events and politics to plan contingency activities when/if necessary. 	Social, environmental	P=2 I=5
10	Large-scale infrastructural developments take place within project areas.	Project activities are disrupted or delayed.	<ul style="list-style-type: none"> • The project manager and CTA will work with appropriate governmental agencies to ensure prioritisation of the LDCF project in the project areas. 	Institutional	P=1 I=3

A.7. Coordination with other relevant GEF financed initiatives

The first LDCF project, **Implementing NAPA Priority Interventions to Build Resilience in the Most Vulnerable Coastal Zones in Djibouti**, was initiated in September 2010 and will end in late 2014. It is being implemented in two villages, Khor-Angar and Damerjog, located in the regions of Obock and Arta, respectively. This project has three components: i) strengthening of institutional capacity for integrated coastal zone management and integrated water resources management; ii) rehabilitation of ecosystems that regulate the coastal zone; and iii) development of climate forecasting and early warning systems. The following activities of the first LDCF project are linked to this second proposed LDCF project: i) improving access to water; ii) restoring mangroves; and iii) development of sustainable fisheries and ecotourism around the restored mangroves. The proposed LDCF project will build on the lessons learned from the first LDCF project. For example, the protocols developed for mangrove restoration during the first LDCF project will be used in the proposed project. And information on water re-use for agriculture generated in the first LDCF project will inform the implementation of the agropastoral activities of the proposed project. The proposed project will, in addition, benefit from the building of government capacity during the first LDCF project. This capacity building included the training of government stakeholders on climate change effects and adaptation. The link between the first and second LDCF projects will be further strengthened by including participants/stakeholders from the first LDCF project into the Project Steering Committee (PSC) of the proposed project. Additional opportunities to include participants/stakeholders from the first LDCF project into the activities of the second LDCF project will be identified.

Other relevant non-GEF initiatives

74. In May 2013, the **Rural Livelihoods Adaptation to Climate Change in the Horn of Africa (RLACC)** programme was approved. It will be implemented in Djibouti and Kenya. The implementing agency (IA) is the AfDB and the executing agency (EA) in Djibouti is the MAPE-RH. The objectives of RLACC are to: i) increase the resilience of local pastoral and agropastoral communities to climate change; and ii) promote climate resilient

livelihoods. The AfDB project includes the implementation of public awareness campaigns on climate change and training of local governments for the integration of climate change adaptation into development plans. As such, there is potential for synergy between RLACC and the LDCF project. In particular: i) cross-pollination of adaptation concepts, lessons learned and protocols; and ii) community engagement. However, the RLACC activities and implementation sites in-country have not yet been selected.

75. From 2012-2016, the **Developing Agro-Pastoral Shade Gardens as an Adaptation Strategy for Poor Rural Communities in Djibouti** project is being implemented, funded through the Adaptation Fund. UNDP is the IA with the MHUE and CERD as EAs. The objective of the project is to “diversify and promote climate-resilient agropastoral practices in rural Djibouti”. This will be achieved by: i) increasing the capacity of agropastoral communities to secure sustainable access to water; ii) developing shade gardens to support agropastoral systems that are diversified, replicable and climate resilient; and iii) securing access to finance for local communities to develop agropastoral enterprises that are climate resilient. The project will be implemented in plains of Grand and Petit Bara in the Arta and Dikhil Regions. Many activities of the AF project are similar to the LDCF project activities such as the construction of water management infrastructures, the creation of agropastoral shade garden plots, the creation of agropastoral cooperatives and the development of microfinance opportunities for agropastoralists. The LDCF project will benefit from the experience gained by the AF project during implementation. For example, the LDCF project budget included consideration of lessons learned by the Adaptation Fund project regarding under-estimation of project costs. Collaboration has already been initiated between the two projects and will be continued during the implementation of the LDCF project to ensure that both project’s activities are complementary and additional. The exchange of lessons learned, tools and protocols between the two projects will guide the implementation of project activities.

76. The UNDP-led LDCF project, “**Supporting Rural Community Adaptation to Climate Change in Mountain Regions of Djibouti**” is anticipated to be submitted for funding approval in January 2014. The objective of the UNDP project is to reduce the climate-related vulnerabilities facing the inhabitants of mountainous regions of Djibouti through institutional strengthening, climate-smart water management and targeted investment. The components and proposed activities of the UNDP project are closely aligned with this UNEP-led LDCF project and it is anticipated that both projects will benefit from continuous cooperation and coordination. The goal of Component 1 of the UNDP project is to support the re-establishment of the National Climate Change Committee (NCCC), which is also an objective of this UNEP LDCF project. LDCF resources will be used in the UNEP project to host an initial workshop in order to bring stakeholders together to participate in a fact-finding and gap analysis exercise for the NCCC. The UNDP LDCF project will build on these initial activities by implementing several long-term measures to build the capacity of the NCCC and support the design and implementation of a National Climate Strategy for Djibouti. The UNDP project will also be implementing activities to increase awareness of climate change and providing training on climate change adaptation to local and national government which will build on the capacity, skills and protocols developed by this UNEP LDCF project. Both projects will include activities in Tadjourah district – the UNEP project activities will be implemented in downstream areas of Tadjourah whereas the UNDP project will focus on upstream watershed areas in Tadjourah – and as a result there is an opportunity for the activities of the two projects to be coordinated to ensure that they are complementary. It will be important for stakeholders of both projects to maintain close collaborative relationships to ensure that both initiatives benefit from shared knowledge and information as well as to reduce the risk of duplication of efforts. Other activities which the UNDP initiative is likely to introduce which will be supported by the pilot activities of the UNEP LDCF project include: i) hard engineering interventions such as construction and repair of gabions; ii) establishment of nurseries for revegetation of degraded areas; iii) providing training on sustainable agropastoral practices; and iv) promotion of alternative livelihood options including handicrafts. The UNEP LDCF project will provide several resources of information that can be used to guide the design and implementation of the UNDP project, such as the hydrological and pedological studies in Tadjourah and the research on the adaptation benefits and cost-effectiveness of the UNEP LDCF project’s approach.

77. The **Great Green Wall (GGW)** is a planned project to plant a wide belt of trees across Africa’s Sahara and Sahel regions. Within Djibouti, the MHUE has developed a national strategic plan for the establishment of the GGW. This was done in collaboration with UNEP and the African Forest Forum (AFF). The objective of the GGW is to address the social, economic and environmental effects of land degradation and desertification in the Sahara and Sahel. In Djibouti, the GGW is intended to improve the socio-economic conditions of 120,000 people living adjacent

to it. Both the GGW and the proposed LDCF projects will mutually benefit from the lessons learned in each project. For example, the proposed LDCF project will build on information available in the GGW project concerning the establishment of nurseries. Similarly, the LDCF project will provide the GGW with relevant information on climate-resilient species to be planted. In addition, the increased public awareness on desertification and ecosystem restoration will promote the support for the GGW from local communities.

78. The FAO is implementing the **Technical Cooperation Programme (TCP)** in Djibouti. Within this programme, vegetable and fodder crop seeds are provided to 7,000 vulnerable farming families. The programme also provides hoes, rakes, watering cans, pesticides and salt licks for livestock. FAO's interventions in Djibouti also include: i) implementation of the Special Programme for Food Security (PSSA); ii) preparation of the National Food Security Programme (PNFA); iii) promotion of diversified livelihoods; iv) control of illegal fishing; v) reducing the vulnerability of local communities to inflation of food prices; vi) providing technical assistance in the preparation of laws on plant control; vii) facilitating the awarding of agricultural land concessions to private investors; and viii) securing funds to assist local communities affected by droughts. Interactions with the TCP will benefit the proposed LDCF project, particularly in diversifying alternative livelihoods and reducing food security.

79. Since 2006, the **International Fund for Agricultural Development (IFA/FIDA)** has provided financial support for the development of the microfinance and microenterprise sectors. FIDA's interventions complement the new legislation on microfinance as well as the strategy for its enforcement. This strategy was prepared in collaboration with UNDP. In particular, FIDA is developing a network of microfinance institutions to support farmers. FIDA, together with the Associé au Programme de Petites Subventions – Fonds pour l'Environnement Mondial (PMF UNDP-GEF), also funds the Surface Water Recharge for Agropastoral Development (MESDAP) programme. The MESDAP will: i) improve surface water recharge by the construction and restoration of dams; and ii) develop new – and strengthen existing committees – for the management of watersheds and dams. Interaction has been initiated between MESDAP and the LDCF project to prevent overlap of activities.

80. The Observatory of Sahara and Sahel (OSS) is executing the **Inter-governmental Authority on Development**³⁴ (IGAD) project funded by the AfDB and implemented in 8 countries including Djibouti. IGAD started in 2007 and focuses on mapping, monitoring and evaluating water availability in the IGAD region. The LDCF project will benefit from the experience of the IGAD project in: i) monitoring and evaluation of adaptation capacity; ii) monitoring and evaluation of water resources; and iii) the increase of government capacity regarding water management. The proposed LDCF project will contribute to filling the gap in the data available on water resource in the IGAD region, which is the objective of the second phase of the IGAD project initiated in 2013.

81. In Djibouti, there are several projects and programmes that are focussed on the provision of water. The LDCF project will be linked to those listed below.

- The European Union (EU) is funding the restoration of: i) solar-powered borehole pumps in rural areas; and ii) potable and wastewater systems. Coordination between the EU and the proposed LDCF project will promote efficacy of these interventions.
- The UN Office for the Coordination of Humanitarian Affairs (OCHA) project builds upon the ongoing FAO programmes that restore solar-powered pumps to extract groundwater for irrigation. Moreover, the UN Country Team provides assistance to vulnerable communities living in drought-affected areas.
- Within the Food-for-Work programme, families assist with the construction of underground cisterns and other water storage systems.
- The Islamic Development Bank³⁵ is providing financial support for a feasibility study for the construction of two dams in Ali Sabieh and Tadjourah.
- The World Bank is funding several projects that address the vulnerability of local communities to droughts. These projects focus on recharging surface and ground water.
- The Saudi Fund for Development increases access of rural communities to potable water.

³⁴ IGAD is an eight-country trading bloc based in Eastern Africa. Including governments from the Horn of Africa, Nile Valley and African Great Lakes, its headquarters are located in Djibouti.

³⁵ Banque Islamique de Développement.

- The interventions of the United Nations Children's Fund (UNICEF) include building the resilience of local communities to droughts by restoring and constructing dams and drilling boreholes.
- The Abu Dhabi Fund for Development constructs dams and boreholes to increase the availability of potable water in Djibouti. Additionally, it provides equipment for the use of solar energy.
- The African Development Bank (AfDB)³⁶ funds the Support to the Surface Water Recharge programme, which provides water for domestic and agricultural uses.
- The French Red Cross and Djibouti's Red Crescent construct dams and boreholes to increase surface water availability.

82. The LDCF project will also establish linkages with the projects and programmes that are focused on agriculture and food security. These include:

- the UN's Central Emergency Response Fund, which is providing funds to assist 85,000 rural and peri-urban pastoralists through the distribution of seeds and equipment;
- the Islamic Development Bank (IDB), which provides financial support to the Special Food Security Programme (PSSA)³⁷ initiated by FAO; and
- the Arab Authority for Agricultural Investment and Development, which is funding a pilot project that focus on the production of vegetables in greenhouses.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

83. The implementation of the proposed LDCF project will maintain the same approach of participatory consultation and stakeholder engagement that was applied during the PPG phase. A plan for engagement of stakeholders during the implementation phase will be developed during the project inception workshop. Stakeholders will be consulted throughout the implementation phase to ensure that they: i) have a clear understanding of the project's objectives and intended outcomes; and ii) take ownership of the project's activities through participation in planning, implementing and monitoring of project interventions.

84. The mechanisms for stakeholders consultations will include: i) initial meetings of regional government (i.e. regional head and regional advisor committees of Dikhil and Tadjourah regions) and national government institutions (i.e. MHUE, MAPE-RH) during the inception workshops (see Section 2.5); ii) consultation meetings with the baseline projects' coordinators and cofinancing institutions (see Section 2.6); iii) consultation meetings at the local scale with CBOs and NGOs (e.g. AAH, AFT) and community leaders; and iv) consultation meetings in local communities with the beneficiaries of the LDCF project.

85. Local communities' involvement will be encouraged through the creation of committees (one committee per agropastoral plot). Community leaders from the intervention sites will be invited to every meeting of the Project Management Committee. These activities will build upon existing relationships and agreements with local communities. Relevant local associations such as the AAH have, for example, already agreed to participate in the implementation of the project.

86. Stakeholder consultations will be divided into three phases during the four-year project implementation period. Firstly, the 'mobilisation phase' will run during the first year of the project, during which time: i) specific details of the activities and local management structures for implementation will be developed; ii) partnerships for action will be forged; and iii) the extent of stakeholder engagement in each activity will be developed and signed off by the relevant stakeholders. Secondly, the 'consultative implementation' phase will run during the main implementation phase of the LDCF project. This phase involves applying the stakeholder involvement plan to each of the activities defined during the first phase. Thirdly, the 'completion and upscaling' phase will start during the last year of project implementation. This phase will support the sustainability of the

³⁶ Banque Africaine de Développement.

³⁷ Programme Spécial de Sécurité Alimentaire.

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project by transferring responsibility for management of the LDCF project's investments to the stakeholders. The specific stakeholders to be engaged at each stage of project implementation are presented in Table 1.

Outcome s	Activities	Stakeholders	Federal Sector	Directorate of Land Use and the Environment (MHUE)	Directorate of Rural Hydraulics (MAPE-RH)	Directorate of Livestock Management (MAPE-RH)	Directorate of Fishing (MAPE-RH)	Ministry of Economy	National Meteorological Service (ANM)	Risk Management Secretary (Ministry of Interior)	Social Development Agency of Djibouti (ADDS)	National Office for Water Management and Treatment of Djibouti (ONEAD)	Office National de Tourisme de Djibouti	Centre de Recherche, d'Information et de Production de l'Éducation Nationale (CERD)	Directorate of Overseas Financing Leveraging Eco-tourism and the Private Sector	Technical research institutions	CERD	Regional sector	Regional Advisory Committee of Tadjourah	Regional Advisory Committee of Hanlé	Local sector	Key local associations	Traditional and religious leaders
Outcome 1: The negative impacts of droughts and floods are reduced or averted	Construction of hard infrastructure (1.1.2 to 1.2.8)			X	X							X							X	X			
	Climate modelling, Hydrogeological and pedological studies (1.2.1 to 1.2.3)			X	X	X			X			X					X		X	X			
	Feasibility studies (1.1.9, 1.2.4)			X	X				X								X		X	X			
Outcome 2: The negative impacts of droughts and floods are reduced or averted	Acacia woodlands restoration activities (2.1.1 to 2.1.5)			X					X								X		X	X		X	X
	Mangrove restoration activities (2.2.1 to 2.2.5)			X			X		X			X					X		X			X	X
	Public awareness campaigns and training (2.1.6, 2.2.6)			X					X					X					X	X		X	X
Outcome 3:	Agropastoral plots construction			X	X	X		X									X		X	X		X	X

Livelihoods that are sustainable, climate-resilient, and contribute to maintaining ecosystem services	(3.1.1 to 3.1.4, 3.1.7, 3.1.11)																				
	Training of the agropastoralists (3.1.5, 3.1.6, 3.1.8, 3.1.9)		X		X												X	X		X	X
	Training on alternative livelihoods (3.2.3&4)		X		X		X				X	X			X		X	X		X	X
	Public awareness campaign (3.1.7, 3.2.1) & knowledge sharing (3.2.2)		X	X	X							X					X	X		X	X
	Microfinance opportunities development (Activities 3.1.10, 3.1.12 and 3.2.4)									X											
Outcome 4: Increased capacity of institutions and communities to proactively adapt to climate change	Capacity building in line ministries and research projects (4.1.1&4)		X	X	X	X	X	X		X	X	X	X		X		X	X			
	Establishment of an online platform for knowledge sharing (4.1.5)		X	X	X	X	X	X		X	X	X	X		X						
	Establishment of committees, farmers' cooperatives and financial investment options. 4.2.1&2)		X		X		X			X							X	X		X	X
	Climate change		X					X	X				X				X	X			X

	public awareness campaigns (4.2.3&4)																			
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Outcomes	Activities	Stakeholders	Federal Sector	Directorate of Land Use and the Environment (MHUE)	Directorate of Rural Hydraulics (MAPE-RH)	Directorate of Livestock Management (MAPE-RH)	Directorate of Fishing (MAPE-RH)	Ministry of Economy	National Meteorological Service (ANM)	Risk Management Secretary (Ministry of Interior)	National Office for Water Management and Treatment of Djibouti (ONEAD)	Office National de Tourisme de Djibouti	Centre de Recherche, d'Information et de Production de l'Éducation Nationale (CRIPEN)	Directorate of Overseas Financing Leveraging Eco-tourism and the Private	Technical research institutions	CEPD	Regional sector	Regional Advisory Committee of	Regional Advisory Committee of Hanlé	Key local associations	Traditional and religious leaders
Outcome 1: The negative impacts of droughts and floods are reduced or averted	Construction of hard infrastructure (1.1.2-8)			X	X						X							X	X		
	Hydrogeological and pedological studies (1.2.1, 1.2.2)			X	X	X			X		X					X		X	X		
	Feasibility studies (1.1.9, 1.2.3)			X	X				X							X		X	X		
Outcome 1: The negative impacts of droughts and floods are reduced or averted	Acacia woodlands restoration activities (2.1.1 to 2.1.5)			X					X							X		X	X	X	X
	Mangrove restoration activities (2.2.1 to 2.2.5)			X			X		X			X				X		X		X	X
	Public awareness			X					X				X					X	X	X	X

	campaigns and training (2.1.6, 2.2.6)																			
Outcome 3: Livelihoods that are sustainable, climate-resilient, and contribute to maintaining ecosystem services	Agropastoral plots construction (3.1.1-4, 3.1.7, 3.1.10, 3.1.11)		X	X	X				X					X		X	X		X	X
	Training of the agropastoralists (3.1.5, 3.1.6, 3.1.8, 3.1.9)		X		X											X	X		X	X
	Training on alternative livelihoods (3.2.3-4)		X		X		X				X	X		X		X	X		X	X
	Public awareness campaign (3.1.7, 3.2.1) & knowledge sharing (3.2.2)		X	X	X						X					X	X		X	X
Outcome 4: Increased capacity of institutions and communities to pro-actively adapt to climate change	Capacity building in line ministries (4.1.1&4)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
	Establishment of an online platform for knowledge sharing (4.1.5)		X	X	X	X	X	X	X	X	X	X	X	X						
	Establishment of committees, farmers' cooperatives and financial investment options. 4.2.1		X		X		X			X						X	X		X	X

	to 4)																		
	Climate change public awareness campaigns (4.2.5)			X				X	X			X					X	X	

Table 1. Relevant partners and stakeholders identified for engagement by project outcome.

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

87. Djibouti is vulnerable to climate change-induced hazards such as floods, droughts and sea-level rise. The impacts of these hazards are particularly detrimental to Djibouti's water, agriculture and health sectors. Djibouti also faces several non-climate change-related threats. Unplanned and unsustainable resource use is particularly problematic because it results in widespread degradation of ecosystems. This includes overgrazing by livestock, and unsustainable use of woodfuel. To address these problems, the proposed LDCF project will use a combination of EbA and hard infrastructure interventions supported by institutional and capacity development activities to reduce the vulnerability of local communities living in the Hanlé Plains of Dikhil Region and in the inland plains and coast of Tadjourah Region to climate change.

88. These districts were identified in Djibouti's NAPA as being particularly vulnerable to climate change. The intervention sites within these districts were determined through intensive stakeholder consultation. The project will enhance delivery of ecosystem goods and services under conditions of climate change by: i) restoring degraded Acacia woodlands and mangroves; ii) using hard infrastructure to combat droughts and floods; and iii) establishing agropastoral plots to increase agricultural productivity and diversify livelihoods. The outcomes of the proposed LDCF project will generate multiple socio-economic benefits including inter alia: i) increased availability and quality of water for domestic use and irrigated agriculture; ii) reduced damage and economic losses resulting from floods; and iii) increased resilience of agriculture to droughts. The agropastoral interventions will directly benefit 250 families (~1500 individuals). Additional benefits include increasing ground water recharge through ecosystem restoration and the use of rainwater harvesting technologies such as Zai, contoured earthen bunds and ridged contours. These activities will be complemented by a public awareness campaign on the benefits of these alternative livelihood practices. Diversification of livelihoods will increase the resilience of the local communities by reducing reliance on a narrow range of resources such as pasture lands. It will also provide opportunities for women in the form of handcraft making and other market orientated interventions. Consequently, this diversification will decrease poverty and food insecurity. This stands to benefit the 90,000 people living in each district. Approximately half of this population are nomads. As such, the interventions will decrease the vulnerability of this particularly exposed group to climate change. Additionally, by restoring the natural ecosystems in the study sites, the project increases the availability of natural habitat for plant and animal species that depends on these ecosystems, including endangered and endemic species.

89. The LDCF project interventions will: i) strengthen the technical and institutional capacity of the government to include climate change adaptation in national strategies, development planning and externally funded projects (see Sections 2.6 and 2.7); and ii) increase the capacity of local communities to adapt to climate change. The latter will be achieved in three ways. Firstly, the project will invest in hard infrastructural measures, such as flood protection gabions, boreholes and storage dams, to reduce the impact of climate-related hazards such as floods and drought on local communities. Secondly, the project will promote the sustainable management of natural resources such as water and Acacia woodland ecosystems to generate ecosystem goods and services through an EbA approach. Thirdly, the project will promote climate-resilient livelihood alternatives through, for example, the cultivation of a range of climate-resilient crops and fodder species in agropastoral plots. Stakeholders will benefit from training, awareness raising and pilot demonstrations of both EbA and infrastructure-based adaptation options. Information generated by the project, including through long-term studies of the effects of project interventions, will be collated and disseminated in order to support replication and upscaling of project activities. These project interventions are a hybrid approach to climate change adaptation, which includes both the EbA approach advocated by UNEP combined with a conventional infrastructure-based approach to reducing vulnerability to climate-related hazards. These interventions are aligned with UNEP's Program of Work as well as priorities identified in Djibouti's NAPAs.

90. The LDCF project was designed in consultation with multiple local stakeholders and included considerations of equal gender representation. All interventions of the LDCF project will maintain a participatory approach to include stakeholders such as participating communities, local associations such as AAH, and relevant governmental institutions. This approach will support buy-in and ownership of the project by all participating stakeholders (see Section A.5), thereby supporting the long-term sustainability of the interventions..

91. In 2002, Djibouti adopted a National Policy for the Integration of Women into Development (SNIFD³⁸). The objective of this policy is to allow women to attain positions of responsibility and participate actively in development and decision-making processes. Priority will be given to health, education, decision-making and women's livelihoods. Accordingly, gender equity will be considered in each activity of the LDCF project. Gender equity is defined here as the equal participation of men and women in project activities. The proportion of women involved in the project activities will be monitored during project implementation. Stakeholder decisions relating to project activities will only be made with sufficient representation of women³⁹. Furthermore, the material and training for two of the alternative livelihoods introduced by the LDCF project in Component 3 will be provided to women (i.e. handcraft and aviculture).

B.3. Explain how cost-effectiveness is reflected in the project design:

92. The adaptation interventions to be implemented through the LDCF project will restore natural capital and increase agricultural productivity in the project target areas. This in turn will reduce the vulnerability of local communities living at project intervention sites in Hanlé and Tadjourah. The adaptation interventions are no-regret⁴⁰ and low cost with concrete, tangible benefits. As part of the development of the INC and NAPA, multi-criteria analyses were undertaken to prioritize adaptation interventions according to their potential for positive effects on economic development, social capital and environmental management. Cost-effectiveness was a criterion used to prioritize the allocation of resources. The actions proposed by the NAPA are therefore not only the most urgent and most pressing, but have also been assessed to be cost-effective. The adaptation interventions to be implemented through the LDCF project are prioritized in the NAPA – see Section 2.1. As such, the interventions are already identified as cost-effective by the Government of Djibouti.

93. The potential for natural infrastructure to provide adaptation services is gaining increased attention at national and international levels. This is because there is an urgent need to find tractable, flexible, cost-effective adaptation interventions that reduce vulnerability under rapid anthropogenic climate change. The project's EbA interventions – including mangrove restoration in Tadjourah, woodland restoration in Hanle Plains and expansion/establishment of agropastoral plots in both target areas – are listed among the 400 different adaptation measures identified as cost-effective in the UNEP-GEF McKinsey Report⁴¹ on the Economics of Climate Change Adaptation. The ecosystem services generated by restoring ecosystems are varied and difficult to value, however, there is growing evidence of the cost-effectiveness of such investments in natural capital^{42,43}.

94. The benefits of the adaptation interventions will be enhanced by training communities on the maintenance and improved management – relative to current management practices – of the restored ecosystems and agropastoral plots. Training will target communities at all intervention sites and management committees at each agropastoral plot in Hanle and Tadjourah. This training will be complemented by farmer input kits (Activity 3.1.4) which will increase agricultural productivity. This will increase food security and contribute to the establishment of sustainable, alternative livelihoods. Community ownership of the project will in turn be established. This will reduce the overhead for monitoring and maintenance of the interventions and will promote sustainability of project benefits beyond the project lifespan, further enhancing the cost-effectiveness of the LDCF

³⁸ Politique Nationale pour matière d'intégration de la femme dans le développement.

³⁹ A minimum of 30% of women will be necessary.

⁴⁰ No-regret options are those that are justified by current climate conditions and further justified when climate change is considered, e.g. pollution reduction in water supplies will be beneficial if water supplies decrease as a result of climate change. Lim, B, and E. Spanger-Siegrfried. 2004. Adaptation policy frameworks for climate change: developing strategies, policies and measures. Cambridge University Press, Cambridge, UK pp 253.

⁴¹ The McKinsey Group, 2010. Shaping Climate-Resilient Development.

http://www.mckinsey.com/App_Media/Images/Page_Images/Offices/SocialSector/PDF/ECA_Shaping_Climate%20Resilient_Development.pdf. [Accessed 2 September 2011].

⁴² Jones, H.P., D. G. Hole & E. S. Zavaleta. 2012. Harnessing nature to help people adapt to climate change. Nature Climate Change 2: 504-509.

⁴³ A study in Lami Town, Fiji, found that EbA options provide a high benefit-to-cost return in terms of avoided flood damages as well as provision of secondary ecosystem services. See: UNEP/STREP 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji: Synthesis Report.

project interventions.

95. The LDCF project will build on existing initiatives in Djibouti which will reduce the costs for the project. For example, detailed protocols for mangrove restoration have been developed through the first LDCF project and will be used in the proposed LDCF project. Furthermore, the investments in mangrove restoration activities will be supported by additional complementary measures such as the construction of fenced enclosure to exclude livestock from the restoration sites and the dredging of sediment from tidal canals. The project's interventions designed to increase the productivity and climate-resilience of agriculture are also examples of activities which will be informed by previous and ongoing initiatives. These activities, which will include the expansion of existing agropastoral plots in Kouidi Koma and Liliya Bouri will enhance cost-effectiveness of LDCF investments by building on current national development programmes and collaborating with ongoing, related initiatives.

96. Recent research shows that EbA is most effective as part of an overall adaptation strategy⁴⁴. Such a strategy would include 'hard' and 'soft' adaptation interventions. The proposed LDCF project will implement 'hard' adaptation interventions such as the construction and rehabilitation of gabion walls and boreholes. These interventions will be complemented by soft EbA interventions such as bank stabilisation, water conservation and rainwater harvesting in the target project areas. Further 'soft' interventions, such as technical and institutional capacity building of national and local stakeholders, will enhance the sustainability of the LDCF project. Examples of the benefits of this complementary approach are well documented in the international literature⁴⁵.

97. An economic analysis of the cost-effectiveness of a hybrid approach to climate change adaptation – including both EbA and engineering options – was undertaken based on the outcomes of an adaptation project in Lami, Fiji, implemented by UNEP, UN-HABITAT, SPREP and the Lami Town Council ⁴⁶. This study included assessments of the costs and benefits of measures based on EbA options, engineering options and a hybrid approach which includes both 'hard' engineering and 'soft' EbA interventions. This analysis demonstrated that EbA options are at least twice as cost-effective as hard engineering options (benefit:cost ratio of ~US\$ 10.50 compared to ~US\$ 4.80). However, the same cost-benefit analysis indicated that EbA measures in isolation are less effective measures for avoidance of damages relative to hard engineering measures (EbA measures are estimated to reduce damages by up to 12-25% compared to estimated 25-50% damage avoidance for engineering measures). The analysis also investigated hybrid approaches to climate change adaptation which included complementary EbA and engineering measures. Analysis of hybrid adaptation options indicated that adaptation strategies which combined both EbA and engineering options, irrespective of the proportional emphasis on EbA relative to engineering, were likely to reduce damages by 25% with a benefit:cost ratio of US\$ 4.30-8.00.

98. The report on these cost:benefit analyses noted that accurate data to estimate the economic cost of inaction at a spatially explicit level is required to determine the likely avoided damage as a result of intervention options. Furthermore, accurate cost:benefit analyses require accurate environmental and economic data to estimate the direct and indirect economic value of ecosystem services. These datasets are not available for Djibouti and as a result it is challenging for project developers to accurately determine the cost-effectiveness and likely effect of adaptation activities. It is anticipated that the long-term research undertaken through the LDCF project will contribute to increasing local knowledge and information to support the development of locally appropriate

⁴⁴ Travers et al. 2012. Ecosystem-Based Adaptation Guidance: Moving from Principles to Practice. UNEP Working Document.

⁴⁵ A recent shift to integrate both hard and natural infrastructure in the Yangtze River in China has resulted in the seasonal opening of embankment sluice gates. This has restored the connections between the Yangtze River, three major lakes and their associated wetlands. Whereas dams and dykes on the Yangtze River provided water for agriculture, they also caused flooding, blocked animal migrations and degraded water-purifying vegetation, leading to eutrophication and loss of water quality. The integrated approach, including EbA interventions, has increased floodwater retention, water purification and agricultural opportunities, and has restored migration routes for spawning fish. See: Jones et al. 2012. Harnessing nature to help people adapt to climate change. Nature. Published online: 26 June 2012 | doi: 10.1038/nclimate1463.

⁴⁶ SPREP, 2013. Rao N.S., Carruthers T.J.B., Anderson P., Sivo L., Saxby T., Durbin, T., Jungblut V., Hills T., Chape S. 2013. An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands. A technical report by the Secretariat of the Pacific Regional Environment Programme. Apia, Samoa

adaptation options.

Despite rapidly accumulating evidence highlighting the potential benefits of EbA, uncertainties of the cost-effectiveness do remain. This is because it is a new field of endeavor in least developed as well as developed countries. Consequently, long-term research will be conducted through the LDCF project to better understand the benefits of integrating 'hard' and 'soft' interventions. This research, undertaken by two MSc students and one PhD student, will monitor and evaluate the cost-effectiveness of the LDCF project interventions (Component 4). The findings will be used to inform which interventions should be upscaled to similar ecosystems at a national level. Lessons learned from the research, as well as from the on-the-ground adaptation interventions, will be captured and shared with stakeholders through workshops, awareness campaigns and the online platform established through Component 4. Such stakeholders include government technical staff, policy-makers, restoration practitioners, scientists, university students, school children and the general public. Informing a broad range of stakeholders of the benefits of an integrated EbA approach, thereby promoting further upscaling of EbA, will enhance the cost-effectiveness of the LDCF's overall investment in Djibouti.

C. DESCRIBE THE BUDGETED M & E PLAN:

Type of M&E activity	Responsible Parties	Budget US\$ (Excluding project team staff time)	Time frame
Inception workshop and report	<ul style="list-style-type: none"> - NPC - NTAs (National Technical Advisor) - SA (Senior Advisor) - UNEP Task Manager (TM) 	Indicative cost: \$12,100	Within first two months of project start up
Measurement of means of verification of project results	<ul style="list-style-type: none"> - UNEP TM, - SA, - NTAs - NPC will oversee 	To be finalized in Inception Phase and Workshop. This includes hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of means of verification for project progress on output and implementation	<ul style="list-style-type: none"> - UNEP TM, - NPC, - SA, - NTAs and - project team 	To be determined as part of the AWP's preparation.	Annually prior to PIR and to the definition of annual work plans
PIR	<ul style="list-style-type: none"> - NPC - NTAs - UNEP TM - UNEP FMO (Fund Management Officer) - SA 	None. Financial audit records to be provided from IMIS for PSC review	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> - NPC - SA 	None	Quarterly

Type of M&E activity	Responsible Parties	Budget US\$ (Excluding project team staff time)	Time frame
	- NTAs - UNEP TM		
Mid-term evaluation	- NPC - SA - External Consultant - UNEP TM	Indicative cost: \$35,000	At the mid-point of project implementation.
Final evaluation	- NPC - NTAs - SA - External Consultant - UNEP TM - UNEP FMO	Indicative cost: \$35,000	At least three months before the end of project implementation
Project terminal report	- NPC - NTAs - SA - UNEP FMO - UNEP TM	None	On completion of the terminal evaluation.
Visits to demonstration sites	- UNEP TM - SA - NPC - NTA - NCCC/PSC representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
Consultants	- International M&E Expert	International M&E Expert: \$53,400	During baseline assessment in inception phase, at the mid-point of project implementation and at least three months before the end of project implementation
TOTAL indicative COST Excluding project team staff time and UNEP staff and travel expenses			Estimated to cost \$135,500


PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this form. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mr. Houssein Rirache Roble	Director	MINISTRY OF HABITAT, URBANISATION AND ENVIRONMENT	07/05/2011

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Maryam Niamir-Fuller Director GEF Coordination Office		January 31, 2014	Ermira FIDA Portfolio Manager, UNEP-GEF Adaptation	+254-20 762 3113	ermira.fida@unep.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

	Indicator	Baseline	Targets	Source of verification	Risks/Assumptions
Project objective: “To increase the resilience of the Djiboutian society and economy to the effects of climate change and enhance the capacity of the government to integrate adaptation into its development planning”.	1. Number of climate change adaptation training events, and number of staff trained (disaggregated by gender) in integrating climate change adaptation into development	1. No training in adaptation to climate change has been undertaken.	1. By the end of the project: <ul style="list-style-type: none"> - At least two meetings of the climate change committee. - At least two training workshops on risk assessments. 	1. Reports detailing training workshops including attendance sheets.	<p>Risks: Disruption of project implementation by extreme climate events, e.g. floods.</p> <p>Assumptions: National financial resources are sufficient to maintain project interventions in the long-term.</p> <p>Sufficient technical capacity to conduct preliminary studies and design the implementation of activities.</p> <p>Large-scale infrastructural developments that would disrupt project activities will not take place within the project areas during project implementation.</p> <p>Climate change adaptation priorities are unlikely to be undermined by national emergencies or civil</p>
	2. Number of individuals trained, (disaggregated by gender) in climate-resilient livelihoods.	2. None.	2. At least 200 individuals.	2. Reports detailing training workshops including attendance sheet.	
	3. The percentage change in vulnerability of people (disaggregated by gender living in the project areas).	3. The baseline will be determined in the identified priority sites during the baseline study through a vulnerability assessment.	3a. Mid-way through the project, a 20% increase in the VRA scores. 3b. By the end of the project, a 50% increase in the VRA scores.	3. Gender-sensitive field surveys/VRA.	

						unrest.
Component 1: Protection against water-related climate change hazards.	Outcome 1: The negative impacts of droughts and floods are reduced or averted.	1. Length of gabion walls built.	1. zero m.	1. At least 7,720 m.	1. Surveys of LDCF project interventions sites.	<p>Risk: Disruption of project implementation by extreme climate events, e.g. floods.</p> <p>Assumptions: Surface water and groundwater availability is sufficient to meet local demand.</p> <p>Baseline project activities are achieved as planned.</p> <p>Sufficient technical capacity to conduct preliminary studies and design the implementation of activities.</p> <p>Infrastructure installed will be safe from theft and vandalism</p>
		2. Months during which approximately 20 m ³ water hour ⁻¹ of daylight is available for irrigation of Agropastoral plots.	2. zero * *In Koudi Koma, water is available all year round. However, the current boreholes pump water at 10 m ³ hour ⁻¹ , which is insufficient to meet irrigation demands.	2. 12 months year ⁻¹ .	2. i) Surveys of LDCF project interventions sites; and ii) review of borehole pumping records.	
Component 2: Ecosystem rehabilitation, recovery and resilience.	Outcome 2: Fragile ecosystems are productive and resilient to climate change.	1. Area of restored Acacia woodland in Hanle and Tadjourah.	1. zero ha.	1. At least 100 ha (70 ha in Hanle and 30 ha in Tadjourah).	1. Surveys of LDCF project interventions sites.	<p>Risks: Disruption of project implementation by extreme climate events, e.g. floods.</p> <p>Limited support or buy-in from local communities for sustainable resource management practices.</p>
		2. Area of restored mangroves in central coastal zones of Tadjourah.	2. zero ha.	2. At least 10 ha.	2. Surveys of LDCF project interventions sites.	
Component 3: Sustainable	Outcome 3: Livelihoods	1. Number of households with an	1. In Koudi Koma, date palm trees are	1. 32 in Koudi Koma, 42 in Liliya	1. Surveys of LDCF project interventions	Risk: Limited buy-in from

and resilient livelihoods.	that are sustainable, climate-resilient and contribute to maintaining ecosystem services.	irrigated agropastoral plot marked by a perimeter wall.	grown but are not growing well as fuel is too expensive for the land to be sufficiently irrigated.	Bouri, 16 in Dinamali, 20 in Kalaf, 20 in Afanoina, 20 in Ad Bouya.	sites.	local communities for sustainable resource management practices Assumption: Sufficient technical capacity to conduct preliminary studies and design the implementation of activities. Surface water and groundwater availability is sufficient to meet local demand.
		2. Area of irrigated agropastoral plots.	2. Koudi Koma agropastoral plot is partly irrigated.	2. By the end of the project, at least 60 ha of irrigated agropastoral plots.	2. Surveys of LDCF project interventions sites.	
		3. Number of beneficial species cultivated per agropastoral plot.	3. Zero to one(the agropastoral plots that will be restored currently have date palm trees).	3. An average of 16 different species grown on the agropastoral plots (six tree species, three fodder species and seven crops species).	3. i) Surveys of LDCF project interventions sites; and ii) review of agropastoral plots' production records.	
		4. Amount of fodder and crops produced per year.	4. zero kg.	4. An average of 80 kg ha ⁻¹ year ⁻¹ (TBC).	4. Review of agropastoral plots production records.	
		5. Number of households with more secure access to livelihood assets	5. N/A	5. By the end of the project, at least 250 households will have more secured livelihoods.	5. Gender sensitive field surveys.	
Component 4: Institutional capacity.	Outcome 4: Increased capacity of institutions and communities to proactively adapt.	1. Number of meetings held by the climate change committee per year.	1. N/A.	1. By the end of the project, at least two meetings hold with at least 30 attendees.	1. Review of meeting minutes.	Risks: Disruption of project implementation by extreme climate events, e.g. floods. Assumptions: Governmental institutions will have sufficient capacity to support project activities. Sufficient national financial resources will
		2. Average number of committee meetings per agropastoral plot.	2. N/A.	2. By the end of the project, 24 meetings hold (four per committee during the two last years of the project).	2. i) Review of training records; and ii) interview with a selection of committee members.	
		3. Number of climate change adaptation training events, and number of staff trained	3. N/A.	3. By the end of the project: - At least two meetings of the climate	3. i) Review of training day material; and ii) review of training day summary reports.	

		(disaggregated by gender) in integration of climate change adaptation into development.		<p>change committee.</p> <ul style="list-style-type: none"> - At least two training workshops on risk assessments. - At least 15 policy-makers trained. 		be available to maintain project interventions in the long term.
		4. Number of projects sharing information through the LDCF project website.	4. N/A	4. By the end of the LDCF project, at least 15 different projects.	4. i) Review of number of visitors to the website; ii) review of number of discussions on the forum; and iii) review of number of projects that have published information on the website.	
		5. Number of research projects to access the mid and long term costs and benefits of LDCF project interventions	5. N/A	5. By the end of the project, at least 5 research projects are funded by the LDCF project.	5. Project progress reports.	

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

GEF Secretariat Review Question	GEF Secretariat Recommended Action by CEO Endorsement	Response
5. Does the project fit into the Agency's program and staff capacity in the country?	By CEO Endorsement, please provide further details regarding the proposed implementation and execution arrangements.	Details on the implementation arrangement and capacity are provided in Sections 4 and 5 of the project document.
10. Does the proposal clearly articulate how the capacities developed, if any, will contribute to the sustainability of project outcomes?	While adequately described at this stage, by CEO Endorsement, please present a comprehensive strategy for ensuring the sustainability and scaling up of the adaptation measures introduced by the proposed project. Please refer also to Section 18 below.	<p>For the comprehensive strategy for the sustainability of the investments see the answer to question 18.</p> <p>Information on successes, failures and lessons learned on adaptation to climate change from the LDCF project activities will be transmitted to other on-going projects and to the government for use in future projects. This upscaling strategy is covered by the Activities 4.1.2, 4.1.4 and 4.1.5.</p>
18. Does the project take into account potential major risks, including the consequences of climate change and provides sufficient risk mitigation measures? (i.e., climate resilience)	By CEO Endorsement, however, please discuss in greater details the unsustainable management and maintenance of the adaptation investments proposed and the continued unsustainable use of ecosystem services, and present a comprehensive sustainability strategy to mitigate such risks. Please refer also to Section 10 above.	<p>Several activities of the LDCF project are focused specifically on enhancing the sustainability of our investments.</p> <ul style="list-style-type: none"> •Public awareness campaigns will be conducted on the importance of the restored ecosystems for local communities' resilience to climate change (Activities 2.1.6 and 2.2.6). •The appropriate training will be provided to the local communities so that they are able to conduct the ecosystem restoration activities by themselves (Activities 2.1.6 and 2.2.5). •Local communities will be consulted on any management decisions. In this way, the local community will take ownership of the project, which is an objective of the sustainability strategy. •A management strategy will be developed following the hierarchical organisation of the local communities. The LDCF management team will engage with community leaders to prevent the degradation of the restoration areas in the long term (Activity 2.1.4). •For the sustainability of agropastoral plots and water management infrastructures, management committees will be created within the local communities. The committees will be trained in the necessary skills and knowledge (Activity 4.2.1). •Campaigns will be conducted in schools to raise awareness on the importance of natural ecosystems and adaptation technology for local communities (Activity 4.2.4). •At the government level, training on the

		development and implementation of public awareness campaigns on climate change as well as on the adaptation activities implemented by the LDCF project and other projects will be provided (Activity 4.2.3).
31. Items to consider at CEO endorsement/approval.	Please refer to sections 10 and 18. 09/10/2012 -- Please refer to sections 5, 10 and 18.	See responses to questions 5, 10 and 18.
United States comments on the PIF		Response
We ask UNEP to provide more information regarding the expected additional adaptation activity for 1.2.1, “protective works against wadi and sea flooding in Tadjourah and Hanle”. There is very little description of what this "rehabilitation" and "protective works" involve or discussion of possible negative impacts. The component sounds like it could involve embankments that, without knowing more about their scale, could significantly alter drainage patterns and displace flooding impacts from one area to another.		Protective work against flooding will include the construction of gabion walls to reduce the speed of rainwater flow in wadi beds, the reinforcement of a levee that is already in existence and the restoration of a buffer ecosystem – including <i>Acacia</i> woodlands – on wadi banks. No embankment will be created. Additionally Environmental and Social Impact Assessments (EIAs and SIAs) will be used to inform project activities and make sure that there is no harm to environment as required by Djibouti law. These procedures are detailed in annexes in the project document, including TORs to describe the key elements of EIAs and SIAs that will need to be considered by the national consultants appointed to undertake the assessments. These procedures will be closely adhered to in order to reduce the risk of unintended negative social and environmental impacts.
We note the importance of involving various stakeholders in the design and implementation of a project that focuses on reducing community level vulnerability. Engaging target groups in the development of the project can be critical for achieving the stated objectives. We therefore recommend that UNEP expand on how it will engage private sector, civil society organizations, community based organizations and local and indigenous communities (Section B.5, pg. 19).		The implementation of the LDCF project includes extensive stakeholder participation (See Section 5 of the Project Document). Financing options for the local communities involving the private sector will be developed (see Activities 3.1.12 and 3.2.4).
We note that under section B.5, the PIF does not include the African Center for Meteorological Application		This comment is no longer applicable because the project activities do not include the implementation of an EWS. The LDCF resources will be used to provide training to

<p>for Development (ACMAD) and the Global Climate Observing System (GCOS) for the climate data and modeling components. We strongly request that UNEP consider including ACMAD and GCOS, given the nature of the PIF.</p>		<p>the relevant stakeholders on the use of an EWS to support the GFDRR project funded by the Work Bank (see Section A.5 for more information on the GFDRR project).</p>
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ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS⁴⁷

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG Grant Approved at PIF: 78 500			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF/NPIF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
Stakeholder and Baseline Analysis	8 500	2021.25	6 478.75
Ecosystems and Livelihoods Study	10 000	1355.93	8 644.07
Infrastructure and Technical Needs Assessment	6 000	1355.93	4 644.07
Institutional, financial and knowledge management	14 000	0	14 000.00
Local consultations and Environmental and Social Impact Assessment	31 500	7 098.79	24 401.21
Meetings and workshops	8 500	1 442.2	7 057.80
Total	78 500	13 274.10	65 225.90

⁴⁷ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

NA

ANNEX E: CONSULTANTS TO BE HIRED FOR THE PROJECT USING GEF/LDCF/SCCF RESOURCES

<i>Position Titles</i>	<i>\$/ Person Month*</i>	<i>Estimated Person Month**</i>	<i>Tasks To Be Performed</i>
For Project Management			
Local			
National Project Coordinator	2000	48	<p>The NTA will have the following responsibilities:</p> <ul style="list-style-type: none"> i) Lead the project team and provide overall operational management for the successful execution and implementation of the project, including the daily responsibility to manage, coordinate, and supervise the implementation of the project and the delivery of results in accordance with the project document and agreed work plans. ii) Be responsible for financial management and disbursements, with accountability to the government and UNEP. iii) Oversee and manage project implementation, monitor work progress, and ensure timely delivery of outputs. <ul style="list-style-type: none"> - iv) Report to the CTA and the PSC regarding project progress. - v) Develop and facilitate implementation of a comprehensive monitoring and reporting system. - vi) Ensure timely preparation of detailed AWP's and budgets for approval by PSC. - vii) Assist in the identification, selection and recruitment of staff, consultants and other experts as required. - viii) Supervise, coordinate and facilitate the work of the administrative/technical team (consisting of National Technical Assistants (NTAs), finance/administration staff and national and international consultants). - ix) Control expenditures and assure adequate management of resources. - x) Provide a quarterly update of the expenses of the previous three months and the expenses expected for the next three months. - xi) Establish linkages and networks with the on-going activities of

			<p>other government and non-government agencies.</p> <ul style="list-style-type: none"> - xii) Provide input to management and technical reports and other documents as described in the M&E plan for the overall project. Reports should contain detailed assessments of progress in implementing activities, including reasons for delays, if any, and recommendations on necessary improvements. - xiii) Inform the PSC, without delay, of any issue or risk which might jeopardise the success of the project. - xiv) Liaise and coordinate with UNEP Task Manager (TM) on a regular basis.
Justification for travel, if any:			
For Technical Assistance			
Local			
National Technical Assistant (NTA)	1000	48	<p>The NTA will have the following responsibilities:</p> <ul style="list-style-type: none"> i) act as a liaison with regional authorities and institutions; ii) oversee and manage project implementation, monitor work progress, and ensure timely delivery of outputs in provinces; iii) report to the NPC and CTA regarding project progress. Reports should contain assessments of progress in implementing activities, including reasons for delays, if any, and recommendations on necessary improvements; iv) support the NPC in developing and facilitating implementation of a comprehensive monitoring and reporting system; v) support in the preparation of detailed annual work plans and budgets for approval by PSC; vi) supervise, coordinate and facilitate the work of the technical staff in the project areas; vii) provide input to management and technical reports and other documents as described in the M&E plan for the overall project; and viii) participate in the PSC meetings and organise visits to project sites.

Hydrologist	2500	7	A national consultant (NC) with proven expertise in hydrology (hydrologist) will provide technical assistance in the construction of: i) a levee in Tadjourah (activity 1.1.2); and ii) gabion walls in Hanlé and Tadjourah (activities 1.1.2 to 1.1.4).
Hydrogeologist	2500	9.5	The NC hydrologist will work closely with another NC with proven experience in hydrogeology to: i) verify the suitability of the sites chosen for borehole construction (activities 1.1.5 to 1.1.7); ii) advise on borehole construction (activities 1.1.5 to 1.1.7); iii) provide technical advices for the construction of the reservoirs (activity 1.1.8); and iv) advise on the training to provide to local communities for the maintenance of the boreholes (activity 4.2.1).
Specialist in wastewater	2500	4.5	The NC will: i) investigate the water distribution system in Tadjourah mosques and select one of the mosques for the reuse of ablution water; and ii) design and implement a pilot study for collecting that water and reuse it for irrigation in surrounding gardens (activity 1.2.3).
Botanist	2500	8	The NC will work closely with other NCs and IC to: i) select plants for Acacia woodlands restoration (activity 2.1.1); ii) establish nurseries (activity 2.1.2); and iii) select the plantation sites (activity 2.1.1).
EbA specialist	2500	7	The NC will work closely with other NCs and IC to: i) select appropriate sites for the establishment of RHT and train local communities on the use of RHT (activity 2.1.3); and ii) develop and implement a public awareness campaign on the importance of <i>Acacia</i> woodlands (activity 2.1.6).
Socio-economic specialist	2500	4	The NC will work closely with NTAs, other NCs and IC to: i) design a management plan to label the plantation areas as protected areas; and ii) engage with community leaders and local communities to set aside the plantation areas (activity 2.1.4).

Agriculture specialist	2500	3	The NC will work closely with other NCs and IC to: i) investigate the type of threat (e.g. camels, goats) on the plantation areas; and ii) select and implement the appropriate fencing protocol (activity 2.1.5).
Mangrove specialist	2500	11	The NC will: i) advise on the necessity of dredging the mangrove plantation site and, if necessary, develop a protocol for the construction of a canal (activity 2.2.1); ii) establish mangrove nurseries (activity 2.2.3); iii) provide training of local communities in planting and maintaining mangroves (activity 2.2.5); and iv) develop and implement a public awareness campaign on the importance of mangroves (activity 2.2.6).
Agriculture specialist	2500	28	The NC will work closely with NTAs to: i) select the sites for the construction of the agropastoral plots (activities 3.1.1 and 3.1.2); ii) use the vulnerability assessment conducted during the baseline study to select the beneficiaries of the project and engage with the corresponding communities (activity 3.1.3); iii) design the structure of the individual agropastoral plot (0.5 ha) and of the collective agropastoral plot (8 to 10 ha) (activity 3.1.1); iv) guide community members undertaking the construction of the agropastoral plots (activities 3.1.1 and 3.1.2); v) train communities on best agropastoral practices using a learning-by-doing approach (activities 3.1.5 and 3.1.6); vi) select climate-resilient plants and establish nurseries (activity 3.1.7); vii) train agropastoralists in techniques for product preservation (activity 3.1.9); and viii) select the sites for the establishment of RHT and train local communities on the use of these technics (activity 3.1.10).
Animal husbandry specialist	2500	2	The NC will: i) select one agropastoralist per plot to learn about animal husbandry; and ii) organise a training workshop with the selected agropastoralists in animal husbandry (activity 3.1.8).
Irrigation specialist	2500	4	The NC will work closely with other NCs and ICs to:

			<ul style="list-style-type: none"> i) select the best farmer's package in the intervention sites; ii) investigate the financial options to purchase them; and iii) train local communities in the purchasing and use of these packages (activity 3.1.10).
Finance specialist	2500	4	The NC will investigate the financial options available for the development of agropastoral value chains (activity 3.1.12).
Apiculture specialist	2500	2	<p>The NC will:</p> <ul style="list-style-type: none"> i) develop the protocol to introduce apiculture in the agropastoral plots; ii) purchase the appropriate material; and iii) train local communities in apiculture practices (activity 3.2.1).
Aviculture specialist	2500	2	<p>The NC will:</p> <ul style="list-style-type: none"> i) develop the protocol to introduce aviculture in the agropastoral plots; ii) purchase the appropriate materials; and iii) train women within local communities in aviculture practices (activity 3.2.2).
Microfinance specialist	2500	4	<p>The NC will work closely with other NCs to:</p> <ul style="list-style-type: none"> i) engage with local banks and microfinance institutions to identify the financial option suitable for local economic development; and ii) support agropastoralists in taking small loans to develop their businesses (activity 3.2.4).
Policy specialist	2500	4	<p>The NC will work closely with the climate risk specialist (see below) to:</p> <ul style="list-style-type: none"> i) investigate the options to integrating climate change into development policies; ii) identify the appropriate policy makers within the government to be trained in the consideration of climate change in development planning; and iii) train the policy makers in vulnerability and risk assessments, and upscale of the results into national development (activity 4.1.2).
Climate risk specialist	2500	4	<p>The NC will work closely with the management team of the NDRAMS project to:</p> <ul style="list-style-type: none"> i) investigate the required trainings for the appropriate use of the new EWS system in Tadjourah; and ii) train the risk management unit and local associations in the use of EWS (activity 4.1.3).
IT specialist	2500	9.6	The NC will:

			<p>i) design a website for information sharing;</p> <p>ii) advertise the website to the management team of the ongoing and forthcoming environment projects;</p> <p>iii) provide training to the selected stakeholders on the use of the website; and</p> <p>iv) maintain the website during the implementation period and develop a strategy for the maintenance of the website beyond the end of the project (activity 4.1.5).</p>
Agriculture specialist	2500	3	<p>The NC will:</p> <p>i) engage with the local communities to create management committees; and</p> <p>ii) provide training to the committee members in best agropastoral practices and water management (activity 4.2.1).</p>
Agronomist	2500	4	<p>The NC will:</p> <p>i) engage with local communities to create agropastoral cooperatives; and</p> <p>ii) provide training in product marketing (activity 4.2.2).</p>
Education specialist	2500	4	<p>The NC will work with the Centre of Research, Information and Production of the Ministry of National Education (CRIPEN⁴⁸) to:</p> <p>i) identify schools in the intervention sites, the number of students and teachers and</p> <p>ii) organise public awareness campaigns in each school (activity 4.2.4).</p>
International			
<i>Position Titles</i>	<i>\$/ Person Week*</i>	<i>Estimated Person Weeks**</i>	<i>Tasks To Be Performed</i>
Chief Technical Advisor (CTA)	2500	42.4	<p>The CTA will have the following responsibilities:</p> <p>i) Provide quality assurance and technical review of project outputs.</p> <p>ii) Undertake technical review of project outputs (e.g. studies and assessments).</p> <p>iii) Assist in the drafting of ToRs for technical consultancies.</p> <p>iv) Supervise the work of national and international consultants.</p> <p>v) Assist in monitoring the technical quality of project M&E systems (including AWP, indicators and targets).</p> <p>vi) Conduct the financial administrative reporting and the PIR.</p> <p>vii) Provide advice on best suitable approaches and methodologies for achieving project targets and objectives.</p>

⁴⁸ Centre de Recherche, d'Information et de Production de l'Éducation Nationale
GEF5 CEO Endorsement Template-February 2013.doc

			<p>viii) Provide a technical supervisory function to the work carried out by NTAs, and national and international consultants hired by the project.</p> <p>ix) Assist in knowledge management, communications and awareness-raising.</p> <p>x) Facilitate the development of strategic regional and international partnerships for the exchange of skills and information related to climate change adaptation.</p>
Specialist in hydrology	2500	24.2	<p>The international consultant (IC) will work closely with the NC to:</p> <p>i) select the materials and develop the protocol for the construction of gabion walls and boreholes; and</p> <p>ii) oversee the construction activities with a particular focus on their sustainability (activities 1.1.2 to 1.1.8).</p>
Specialist in renewable energy	2500	6.4	<p>The IC will work closely with NCs to:</p> <p>i) design the protocol of the pilot study to test hybrid solar- and wind-powered pumping system; and</p> <p>ii) implement the pilot study (activity 1.1.9).</p>
EbA specialist	2500	17.8	<p>The IC will provide technical assistance for the implementation of the EbA interventions (activities 2.1.1 to 2.1.6)</p>
Mangrove specialist	2500	8.8	<p>The IC will work closely with NCs to:</p> <p>i) design the protocol for the planting activities;</p> <p>ii) develop the public awareness campaign on the importance of mangroves; and</p> <p>iii) provide support to the NCs when necessary in the mangrove restoration activities during the implementation period (activities 2.2.1 to 2.2.6).</p>
Specialist in adaptation to climate change	2500	15.6	<p>The IC will:</p> <p>i) provide technical assistance to the NCs in selecting the restoration, replanting and RHT sites according to climate predictions;</p> <p>ii) assist the NCs in selecting climate resilient species; and</p> <p>iii) provide support to the NCs when necessary in the realisation of the activities of Component 2 during the implementation period (activities 2.1.1 to 2.2.6).</p>
Agriculture specialist	2500	24.2	<p>The IC will:</p> <p>i) provide technical assistance to the NCs in selecting the construction sites;</p> <p>ii) assist the NCs in selecting climate resilient species and assist in designing the best planting plans according to state-of-the-art knowledge in agriculture; and</p>

			iii) provide support to the NCs when necessary during the development of the agropastoral plots (activities 3.1.1 to 3.1.10).
M&E expert	2500	18.2	The consultant will undertake the following M&E tasks: i) baseline assessment; ii) mid-term evaluation; and iii) final evaluation.
Justification for travel, if any:			

ANNEX F: DETAILED GEF BUDGET

Project number:				891											
Project executing partner				Ministry of Habitat, Urbanisation and Environment (MHUE)											
Project implementation period				Expenditure by project component/activity					Expenditure by calendar year						
From: 01/03/2014				Outcome 1	Outcome 2	Outcome 3	Outcome 4	PM	M&E	Total	Year 1	Year 2	Year 3	Year 4	Total
To: 01/03/2018															
UNEP Budget Line															
10	PERSONNEL COMPONENT														
	1100		Project personnel												
		1101	National project manager (48 months @ \$2000/month)					96 000		96 000	24 000	24 000	24 000	24 000	96 000
		1199	Sub-total	0	0	0	0	96000	0	96000	24000	24000	24000	24000	96000
	1200		Consultants												
		1201	International specialist in hydrology (121 days @ \$500/day; 5 flights @ \$2500/flight; 70 days in-country @ \$166/day - costs split between Activities 1.1.2 to 1.1.8)	80 000						80 000	30 000	20 000	20 000	10 000	80 000
		1202	International specialist in renewable energy (32 days @ \$500/day; 1 flights @ \$2500/flight; 14 days in-country @ \$166/day)	20 000						20 000	0	20 000	0	0	20 000

	1203	International Chief Technical Advisor (212 days @ \$500/day; 8 flights @ \$2500/flight; 80 days in-country @ \$166/day)	40 000	40000	40000	40000			160 000	56 000	40 000	32 000	32 000	160 000
	1204	Hydrologist (140 days @ \$125/day)	17 500						17 500	5 300	8 000	4 200	0	17 500
	1205	Hydrogeologist (190 days @ \$125/day)	23 750						23 750	8 250	15 500	0	0	23 750
	1206	Wastewater expert (90 days @ \$125/day)	11 250						11 250	0	6 250	5 000	0	11 250
	1207	International specialist in EbA (89 days @ \$500/day; 4 flights @ \$2500/flight; 48 days in-country @ \$166/day - costs split between Activities 2.1.1 to 2.1.6)		60 000					60 000	15 000	15 000	15 000	15 000	60 000
	1208	International mangrove specialist (44 days @ \$500/day; 2 flights @ \$2500/flight; 24 days in-country @ \$166/day - costs split between Activities 2.2.1 and 2.2.2)		30 000					30 000	10 000	20 000	0	0	30 000
	1209	International climate change adaptation specialist (78 days @ \$500/day; 5 flights @ \$2500/flight; 50 days in-country @ \$166/day - costs split between Activities 2.2.3 to 2.2.6)		60 000					60 000	15 000	20 000	15 000	10 000	60 000
	1210	National botanist (160 days @ \$125/day)		20 000					20 000	11 500	3 500	2 500	2 500	20 000
	1211	National EbA specialist		17 500					17 500	5 000	10 000	2 500	0	17 500

			(140 days @ \$125/day)											
		1212	National socio-economic specialist (80 days @ \$125/day)		10 000				10 000	0	5 000	5 000	0	10 000
		1213	National agricultural expert (60 days @ \$125/day)		7 500				7 500	0	7 500	0	0	7 500
		1214	National mangrove specialist (220 days @ \$125/day)		27 500				27 500	9 000	17 000	1 500	0	27 500
		1215	International specialist in agriculture (121 days @ \$500/day; 5 flights @ \$2500/flight; 70 days in-country @ \$166/day)			80 000			80 000	20 000	30 000	20 000	10 000	80 000
		1216	National agricultural specialist (560 days @ \$125/day)			60 000	10 000		70 000	7 500	37 500	20 000	5 000	70 000
		1217	National animal husbandary specialist (40 days @ \$125/day)			5 000			5 000	0	5 000	0	0	5 000
		1218	National irrigation specialist (80 days @ \$125/day)			10 000			10 000	0	5 000	5 000	0	10 000
		1226	National financial specialist (80 days @ \$125/day)				10 000		10 000	0	0	5 000	5 000	10 000
		1219	National apicultural specialist (40 days @ \$125/day)			5 000			5 000	0	0	5 000	0	5 000
		1220	National avicultural specialist (40 days @ \$125/day)			5 000			5 000	0	0	5 000	0	5 000

	1221	National microfinance specialist (80 days @ \$125/day)			10 000				10 000	0	0	0	10 000	10 000
	1222	National policy specialist (80 days @ \$125/day)				10 000			10 000	0	5 000	5 000	0	10 000
	1223	National climate risk specialist (80 days @ \$125/day)				10 000			10 000	2 500	5 000	2 500	0	10 000
	1224	National IT specialist (192 days @ \$125/day)				24 000			24 000	12 000	4 000	4 000	4 000	24 000
	1225	National agronomist (80 days @ \$125/day)				10 000			10 000	0	5 000	5 000	0	10 000
	1227	National education specialist (80 days @ \$125/day)				10 000			10 000	0	0	5 000	5 000	10 000
	1228	International M&E expert (51 days @ \$500/day; 2 flights @ \$2500/flight; 28 days in-country @ \$166/day)						33 400	33 400	5 000	12 500	0	15 900	33 400
	1299	Sub-total	192 500	272 500	215 000	124 000	0	33 400	837 400	212 050	316 750	184 200	124 400	837 400
1300		Administrative Support												
	1301	Financial and administrative officer (48 months @ \$1000/month)					48 000		48 000	12 000	12 000	12 000	12 000	48 000
	1302	National Technical Assistant (48 months @ \$1000/month)					48 000		48 000	12 000	12 000	12 000	12 000	48 000
	1303	Focal points at Tadjourah and Hanle (2 x 48 months @ \$600/month)					57 600		57 600	14 400	14 400	14 400	14 400	57 600

		1399	Sub-total	0	0	0	0	153 600	0	153 600	38 400	38 400	38 400	38 400	153 600
	1600		Travel on official business												
		1601	Project Manager travel					49 900		49 900	12 500	12 500	12 500	12 400	49 900
		1699	Sub-total	0	0	0	0	49 900	0	49 900	12 500	12 500	12 500	12 400	49 900
1999			Component total	192 500	272 500	215 000	124 000	299 500	33 400	1 136 900	286 950	391 650	259 100	199 200	1 136 900
20	SUB-CONTRACT COMPONENT														
	2100		Sub-contracts (MOUs/LOAs for supporting organisations)												
		2101	Sub-contract for EIA	40 000						40 000	40 000	0	0	0	40 000
		2102	Sub-contract for the construction of gabion walls and levee in Tadjourah	869 200						869 200	200 000	469 200	200 000	0	869 200
		2103	Sub-contract for the construction of gabion walls in Hanle	212 000						212 000	50 000	112 000	50 000	0	212 000
		2104	Sub-contract for the construction of gabion walls	74 200						74 200	20 000	34 200	20 000	0	74 200
		2105	Sub-contract for construction of boreholes in Tadjourah	710 000						710 000	200 000	510 000	0	0	710 000
		2106	Sub-contract for extension of water distribution network in Tadjourah	167 500						167 500	57 500	110 000	0	0	167 500

	2107	Sub-contract for rehabilitation of boreholes in Hanle	329 750						329 750	139 750	190 000	0	0	329 750	7
	2108	Sub-contract for reservoirs in Tadjourah	408 000						408 000	168 000	240 000	0	0	408 000	8
	2109	Sub-contract climate change modelling studies	100 000						100 000	80 000	20 000	0	0	100 000	9
	2110	Sub-contract hydrogeological and pedological studies	460 000						460 000	260 000	200 000	0	0	460 000	1
	2111	Restoration of Acacia woodland		125 000					125 000	25 000	55 000	35 000	10 000	125 000	1
	2112	Patrolling of restored Acacia woodland areas		30 000					30 000	0	10 000	10 000	10 000	30 000	1
	2113	Preparing sites for mangrove restoration		107 500					107 500	37 500	70 000	0	0	107 500	1
	2114	Cleaning and maintenance of the mangrove restoration site		15 000					15 000	0	5 000	5 000	5 000	15 000	1
	2115	Baseline study		40 000					40 000	40 000	0	0	0	40 000	
	2116	Construct and rehabilitate agropastoral plots in Hanle			150 000				150 000	30 000	100 000	20 000	0	150 000	1
	2117	Construct agropastoral plots in Tadjourah			260 000				260 000	50 000	180 000	30 000	0	260 000	1
	2118	Farmer input kits			150 000				150 000	0	100 000	50 000	0	150 000	1
	2119	Construction and maintenance of soil and water conservation infrastructure			30 000				30 000	0	10 000	10 000	10 000	30 000	1
	2199	Sub-total	3 370 650	317 500	590 000	0	0	0	4 278 150	1 397 750	2 415 400	430 000	35 000	4 278 150	

	2200		Sub-contracts (for commercial purposes)													
		2201	Awareness raising for protection of restored areas		15 000				15000	0	7 500	7 500	0	15000		
		2202	Awareness raising on importance of Acacia woodlands to buffer against the effects of climate change		35 000				35000	0	15 000	10 000	10 000	35000		
		2203	Awareness raising on importance of mangroves to buffer against the effects of climate change		35 000				35000	0	15 000	10 000	10 000	35000		
		2204	Awareness campaign on importance of agropastoral management			70 000			70000	0	50 000	20 000	0	70000		
		2205	Long-term research projects				110 000		110 000	20 000	30 000	30 000	30 000	110 000	1	
		2206	Hosting of online platform				46 000		46 000	22 000	8 000	8 000	8 000	46 000	2	
		2207	Awareness campaign on climate change adaptation projects				50 000		50 000	10 000	20 000	10 000	10 000	50 000		
		2208	Awareness campaign targeting school children				40 000		40 000	0	0	20 000	20 000	40 000	2	
		2299	Sub-total	0	85 000	70 000	246 000	0	0	401 000	52 000	145 500	115 500	88 000	401 000	
2999		Component total		3 370 650	402 500	660 000	246 000	0	0	4 679 150	1 449 750	2 560 900	545 500	123 000	4 679 150	
30	TRAINING COMPONENT															

3200	Group training														
3201	Training of communities in the use of RHTs		12 500					12 500	0	12 500	0	0	12 500		
3202	Training of communities in the techniques of woodland restoration		20 000					20 000	5 000	10 000	2 500	2 500	20 000		
3203	Training of communities in the techniques of mangrove restoration		15 000					15 000	0	10 000	3 500	1 500	15 000	2	
3204	Training of selected beneficiaries on improved agricultural techniques			5 000				5 000	0	5 000	0	0	5 000		
3205	Train trainers at successful agropastoral plots			10 000				10 000	0	10 000	0	0	10 000	2	
3206	Training of communities in animal husbandary techniques			15 000				15 000	0	15 000	0	0	15 000		
3207	Training of communities in preservation techniques			20 000				20 000	0	20 000	0	0	20 000		
3208	Training on construction and maintenance of soil and water conservation infrastructure			66 000				66 000	0	20 000	26 000	20 000	66 000		
3209	Training of communities in the use and maintenance of drip-irrigation systems			20 000				20 000	0	10 000	10 000	0	20 000		
3210	Training of communities in apiculture			25 000				25 000	0	0	25 000	0	25 000		
3211	Training of communities in aviculture			25 000				25 000	0	0	25 000	0	25 000		

	3212	Training of womens association on producing handicrafts			26 000				26 000	0	10 000	10 000	6 000	26 000	
	3213	Training on using microfinance to upscale apiculture, aviculture and handcraft production			10 000				10 000	0	0	0	10 000	10 000	
	3214	Training of policy makers to integrate climate change into development planning				75 000			75 000	0	35 000	40 000	0	75 000	2
	3215	Train risk management units and local associations to interpret received climate information				90 000			90 000	0	45 000	45 000	0	90 000	
	3216	Training of management committess at each agropastoral plot				15 000			15 000	0	5 000	10 000	0	15 000	
	3217	Training of agropastoral cooperatives				30 000			30 000	0	15 000	15 000	0	30 000	
	3218	Training of communities on financial opportunities				40 000			40 000	0	0	20 000	20 000	40 000	
	3299	Sub-total	0	47 500	222 000	250 000	0	0	519 500	5 000	222 500	232 000	60 000	519 500	
	3300	Meeting/Conferences													
	3301	Annual workshop for climate change committee				40 000			40 000	10 000	10 000	10 000	10 000	40 000	25
	3302	Inception workshop						9 100	9 100	9 100				9 100	
	3399	Sub-total	0	0	0	40 000	0	9 100	49 100	19 100	10 000	10 000	10 000	49 100	
3999		Component total	0	47 500	222 000	290 000	0	9 100	568 600	24 100	232 500	242 000	70 000	568 600	

40	EQUIPMENT AND PREMISES COMPONENT																
	4100		Expendible equipment														
		4101	Office supplies				21 200		21 200	8 000	10 000	3 200	0	21 200			
		4199	Sub-total	0	0	0	21 200	0	21 200	8 000	10 000	3 200	0	21 200			
	4200		Non-expendable Equipment														
		4201	Solar and wind power borehole pumps	80 000					80 000	0	80 000	0	0	80 000	2		
		4202	Hydrological monitoring equipment	16 000					16 000	16 000	0	0	0	16 000	2		
		4203	Water distribution system	38 750					38 750	0	18 750	20 000	0	38 750	2		
		4204	Nursery establishment for Acacia woodlands		24 000				24 000	14 000	10 000	0	0	24 000	2		
		4205	Rainwater harvesting equipment		11 000				11 000	0	11 000	0	0	11 000	3		
		4206	Fencing and signage of restored Acacia woodland areas		59 500				59 500	30 000	20 000	5 000	4 500	59 500			
		4207	Nursery establishment for mangroves		108 000				108 000	58 000	50 000	0	0	108 000	3		
		4208	Fencing and signage of restored mangrove areas		62 000				62 000	0	31 000	31 000	0	62 000			
		4209	Purchasing vehicules		80 000				80 000	20 000	20 000	20 000	20 000	80 000			
		4210	Nursery establishment for agropastoral plots			45 000			45 000	15 000	30 000	0	0	45 000	3		
		4211	Soil and water			55 000			55 000	0	15 000	25 000	15 000	55 000			

			conservation equipment													
		4212	Drip-irrigation systems			60 000			60 000	0	30 000	30 000	0	60 000	3	
		4213	Apiculture equipment			30 000			30 000	0	0	30 000	0	30 000	3	
		4214	Aviculture equipment			20 000			20 000	0	0	20 000	0	20 000	3	
		4215	Computer equipment					20 800	20 800	5 200	5 200	5 200	5 200	20 800		
		4299	Sub-total	134 750	344 500	210 000	0	20 800	0	710 050	158 200	320 950	186 200	44 700	710 050	
4999			Component total	134 750	344 500	210 000	0	42 000	0	731 250	166 200	330 950	189 400	44 700	731 250	
50			MISCELLANEOUS COMPONENT													
	5100		Operation and maintenance of equipment													
		5101	Maintaining vehicles (Costs split between Activities 2.1.1, 2.2.3 and 2.2.6)		72 000				72000	18 000	18 000	18 000	18 000	72000		
		5199	Sub-total	0	72 000	0	0	0	0	72 000	18 000	18 000	18 000	18 000	72 000	
	5200		Reporting costs													
		5201	Inception workshop report					3 000	3 000	3 000				3 000		
		5202	Reporting costs		31 100				31 100	7 775	7 775	7 775	7 775	31 100		
		5203	Audits		20 000				20 000	5 000	5 000	5 000	5 000	20 000		
		5299	Sub-total	0	51 100	0	0	0	3 000	54 100	15 775	12 775	12 775	12 775	54 100	
	5300		Sundry													
		5301	Communications	12000	12000	12000	12000		48 000	12 000	12 000	12 000	12 000	48 000		

	5399	Sub-total	12000	12000	12000	12000	0	0	48 000	12 000	12 000	12 000	12 000	48 000
	5500	Evaluation												
	5581	Mid-term evaluation						35 000	35 000		35 000			35 000
	5582	Terminal evaluation						35 000	35 000				35 000	35 000
	5599	Sub-total	0	0	0	0	0	70 000	70 000	0	35 000	0	35 000	70 000
5999		Component total	12 000	135 100	12 000	12 000	0	73 000	244 100	45 775	77 775	42 775	77 775	244 100
99		GRAND TOTAL	3 709 900	1 202 100	1 319 000	672 000	341 500	115 500	7 360 000	1 972 775	3 593 775	1 278 775	514 675	7 360 000

Budget Notes:

1	An EIA study will be conducted at each project intervention site by a national company with demonstrated experience in undertaking EIAs and SEAs. This company will be contracted to investigate the potential environmental and social impact of each activity of the project. Based on the contract signed by the Adaptation Fund project in Djibouti with this company, the EIA and SEA has been allocated US\$ 20,000 per site.
2	The levee will be made of stone gabions and be two meters high. Gabion walls will be made of stones bound in wire, and will be built to a height of one meter. Hence, a total of 8,200 m ³ of gabion will be necessary. The price of gabion is estimated to be US\$ 106 per m ³ . This cost includes purchase of stones, wirenet and cement (US\$ 63), transport stones, wirenet and cement (US\$ 30), and labour and sub-contracting (US\$ 13).
3	See note 2
4	See note 2
5	The cost of the borehole of Kalaf is estimated to be US\$ 236,000. This cost includes the solar pump (US\$ 112,000), the exploratory borehole and water tests (US\$ 40,000), and the average cost of the equipment for a borehole that is 120 to 250 meters deep (US\$ 84,000). The cost of the boreholes of Marsaki and PK6 are estimated to be US\$ 158,000 each. This cost includes the fuel pump (US\$ 13,000), the explanatory borehole and water tests (US\$ 40,000), the average cost of the equipment for a borehole that is 120 to 250 meters deep (US\$ 85,000), and the water distribution network (US\$ 20,000).
6	The cost of the installation of the water distribution network for the boreholes of Darkenlé and Ad bouya is US\$ 83,750 each.
7	The cost of the borehole of Kouidi Koma is estimated to be US\$ 43,750. This cost includes the slab to cover the reservoir (US\$ 8,000), the water distribution network (US\$ 20,000) and reparation of the solar pump system (US\$ 15,750). The cost of the borehole of Liliya bouri is estimated to be US\$ 236,000. This cost includes the solar pump (US\$ 112,000), the exploratory borehole and water tests (US\$ 40,000), and the average cost of the equipment for a borehole that is 120 to 250 meters deep (US\$ 84,000). The cost of the borehole of Dinamali is estimated to be US\$ 50,000. The rehabilitation of this borehole will only include additional solar panels to the system already in place.
8	The cost of a reservoir of 300 m ³ is estimated to be US\$ 68,000.
9	The climate variability study will be an update of the modelling made in 2006 on temperature, precipitation and sea level rise. The expected consequences on water availability (e.g. aquifer recharge, salination, sedimentation) and on the economic sectors will be estimated as well. Its total cost is estimated to be US\$ 100,000.

10	The hydrological studies are estimated to be US\$ 100,000 for Tadjourah and US\$ 213,000 for Hanlé. The cost of the pedological studies is estimated to be US\$ 47,000 per site.
11	The cost of restoration of Acacia woodlands is estimated to be US\$ 1,250 per ha. This cost includes cleaning the sites, planting and removing Prosopis when necessary.
12	Two guard will be hired full time and paid US\$ 10 per day to patrol around the 2 planting sites that are the most vulnerable to grazing.
13	The preparation of the mangrove restoration sites includes the construction of a canal to facilitate water circulation in the planting area.
14	The mangrove areas will be initially cleaned and will be then kept clean over time by hiring full time a local individual. This person will have the role of guard as well to ensure that camels stays out of the planting areas.
15	The cost for the rehabilitation of an agropastoral plot of 8 ha is estimated to be US\$ 40,000. This cost includes the fencing, delimitating the plot and building compost basins. The estimated cost of Liliya bouri and Koudi koma is US\$ 55,000 as the rehabilitation of the irrigation equipment is necessary in these sites.
16	The construction of an agropastoral plot is estimated to be US\$ 9,300 per hectare. This cost includes fencing, removal of stones and irrigation network.
17	This cost includes seeds and transportation for 3 years. Each agropastoralist will be provided with seeds from at least 16 plants. The estimated quantity of seeds that will be provide during 3 years are: 100 kg for fodder species, 20 kg for crops species and 10 kg for fruit trees.
18	This cost includes material for digging.
19	The salary of a PhD student is US\$ 1,200 per month. US\$ 57,000 have been allocated for the PhD student salary (corresponding to 4 years) in order to increase the quality and quantity of data collected and scientific publications. Master students will get a study allowance of US\$ 400 per month for 6 months (US\$ 4,800 for two students). An estimate of US\$ 48,200 will be allocated for the field work.
20	This cost includes the creation, the maintenance, the advertisement of the website, the cost of paying for a domain name and hosting, and sub-contracting costs.
21	This cost includes one day of awareness raising in each school of the intervention sites per two trainers. It includes as well the use of medias such as the national channel, radio and newspapers in the 4 main languages.
22	Members of local communities will be trained and employed to participate in mangrove replanting activities in the proposed restoration sites. These training activities will be complementary to the awareness-raising activities in Activity 2.2.6. The estimated cost of replanting

	mangroves by employing and training local community members is estimated to be ~US\$ 570 per hectare. This is calculated based on the following information from the LDCF1 project manager: i) one person can plant ~50 seedlings per day; ii) recommended planting rate is 3000 seedlings; iii) therefore 10 hectares can be planted within 600 working days; and iv) the recommended daily pay for manual labour is Dji Fr. 1500 per day (US\$ 8.50). Therefore the estimated cost for 10 hectares is ~US\$ 5,700.
23	Three individuals will be selected to be the trainers for the agropastoral plots funded by the LDCF project. A total of 18 persons will thus be trained in the demonstration agropastoral plots. The estimated costs for this activity corresponds to three sessions of training for 7 days and for 6 people per session.
24	At least 15 policy-makers will be trained to upscale nationally climate change considerations and include them into development planning.
25	At least 30 government representatives will be trained during the climate change committees to implement EbA interventions including the restoring Acacia woodlands, replanting mangroves and construction climate resilient agropastoral plots.
26	The cost of solar power system that will be used in the pilot study is estimated to be US\$ 50,000. The cost of wind power system that will be used in the pilot study is estimated to be US\$ 30,000.
27	The hydrological monitoring system consists of a limnigraph and a pluviograph per project area. The estimated cost of a limnigraph is US\$ 6,000. The estimated cost of a pluviograph is US\$ 2,000.
28	The cost of water distribution network is estimated to be US\$ 38,750. This cost includes the piping system from the mosque to the garden and the irrigation system.
29	The cost for the establishment of a nursery for Acacia woodlands containing 5,000 plants is estimated to be US\$ 12,000. This cost includes the fences, labour and plants' containers.
30	The rainwater harvesting equipment includes digging tools.
31	The cost for the establishment of a nursery for mangroves 5,000 plants is estimated to be US\$ 18,000. This cost includes the fences, labour and plant containers.
32	The cost per nursery of 5,000 trees for the agropastoral is estimated to be US\$ 22,500.
33	The cost of drip irrigation system for the irrigation of 250 m2 including 25 mm PVC piping, 32 mm PVC piping, 260 m of drip pipe and a reservoir of 1000 L is estimated to be US\$ 3,000.
34	This price includes hives, protection clothes and extracting tools.

ANNEX F-2 - RECONCILIATION BETWEEN GEF BUDGET AND CO-FINANCE BUDGET (TOTAL GEF & CO-FINANCE US\$)

ANNEX G: MONITORING AND EVALUATION BUDGET AND WORKPLAN

Type of M&E activity	Responsible Parties	Budget US\$ (Excluding project team staff time)	Time frame
Inception workshop and report	<ul style="list-style-type: none"> • NPC • NTAs (National Technical Advisor) • SA (Senior Advisor) • UNEP Task Manager (TM) 	Indicative cost: \$12,100	Within first two months of project start up
Measurement of means of verification of project results	<ul style="list-style-type: none"> • UNEP TM, • SA, • NTAs • NPC will oversee 	To be finalized in Inception Phase and Workshop. This includes hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of means of verification for project progress on output and implementation	<ul style="list-style-type: none"> • UNEP TM, • NPC, • SA, • NTAs and • project team 	To be determined as part of the AWP's preparation.	Annually prior to PIR and to the definition of annual work plans
PIR	<ul style="list-style-type: none"> • NPC • NTAs • UNEP TM • UNEP FMO (Fund Management Officer) • SA 	None. Financial audit records to be provided from IMIS for PSC review	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> • NPC • SA • NTAs • UNEP TM 	None	Quarterly
MTR/MTE	<ul style="list-style-type: none"> • UNEP TM/UNEP Evaluation Office 	Indicative cost: \$35,000	At the mid-point of project implementation.

Type of M&E activity	Responsible Parties	Budget US\$ (Excluding project team staff time)	Time frame
Terminal evaluation	<ul style="list-style-type: none"> • UNEP Evaluation Office 	Indicative cost: \$35,000	At least three months before the end of project implementation
Project terminal report	<ul style="list-style-type: none"> • NPC • NTAs • SA • UNEP FMO • UNEP TM 	None	On completion of the terminal evaluation.
Visits to demonstration sites	<ul style="list-style-type: none"> • UNEP TM • SA • NPC • NTA • NCCC/PSC representatives 	For GEF supported projects, paid from IA fees and operational budget	Yearly
Consultants	<ul style="list-style-type: none"> • International M&E Expert 	International M&E Expert: \$53,400	During baseline assessment in inception phase, at the mid-point of project implementation and at least three months before the end of project implementation
TOTAL indicative COST Excluding project team staff time and UNEP staff and travel expenses			Estimated to cost \$135,500

ANNEX H: PROJECT IMPLEMENTATION ARRANGEMENTS

99. The proposed LDCF project will be implemented over a four-year period according to the workplan (see Appendix 4). Implementation will be informed by lessons learned from the first LDCF project. During the inception phase, the following activities will be conducted: i) the inception workshop (which ensures that all existing and new stakeholders are briefed on the project and that a detailed workplan is developed in a participatory manner) will be held; ii) the EIA and the SEA will be conducted according to national legislation to ensure that none of the activities proposed in the project will have detrimental effects on the environment; iii) the baseline study will take place to measure the baseline of the indicators selected for project outputs and AMAT; iv) hydrological and pedological studies will be undertaken by CERD⁴⁹ to further inform the design of a range of interventions at specific sites; and v) additional project stakeholders will be identified and engaged with (for example, stakeholders involved in initiatives such as OSS⁵⁰).

100. A Task Manager (TM) will be appointed by UNEP to provide technical assistance and oversight to project activities. The TM will formally participate in the following: i) Project Steering Committee (PSC) meetings (one per year); ii) mid-term review and final evaluation; iii) clearance of half-yearly and annual reports; and iv) technical review of project outputs.

Management structure

101. The management structure of the project is presented in Figure 5. The mandate of the PSC will include: i) overseeing project implementation; and ii) reviewing annual workplans and project reports. All decisions taken by the PSC will be communicated to the PMU. The PSC will meet twice a year.

102. The MHUE will be the National Executing Agency (NEA). As such, the MHUE will hire a full-time Project Manager (PM). The PM will conduct the day-to-day management of the project. He/she will operate in a transparent and effective manner in line with all budgets and workplans. In addition, the PM will report on a weekly basis to the TM and the CTA on the progress and challenges encountered on the ground during the execution of activities. In particular, the PM will: i) provide on-the-ground information for UNEP progress reports; ii) engage with stakeholders; iii) organise the PSC meetings; iv) provide technical support to the project, including measures to address challenges to project implementation; and v) participate in training activities, report writing and facilitation of consultant activities that are relevant to his/her area of expertise. Two National Technical Assistant (NTA) will support the PM. The responsibility of the NTA will be to promote: i) the timely execution of activities and achievement of expected deliverables; ii) dialogue between stakeholders particularly at a local level; and iii) participation of local communities in project activities. To achieve this, the NTA will be required to visit the intervention sites regularly. The NTA will also work in close collaboration with the PM (see Appendix 20).

103. International experts will be hired to complement local expertise. Consultant descriptions are included in the budget notes (see Appendix 1). ToRs for project staff are presented in Appendix 19.

104. A Project Managers' Coordination Working Group (PMCWG) will be established to improve the coordination and dialogue between the ongoing projects. The PMCWG will include the CTA, the managers of the baseline projects and representatives of other aligned projects (see Section 2.7). Meetings for the PMCWG will be held twice a year. They will work towards: i) promoting synergy between projects; ii) preventing the duplication of activities; iii) optimising the effects of the project interventions; and iv) sharing lessons learned.

⁴⁹ The government of Djibouti has requested that CERD (a local research institution) conduct the technical (e.g. hydrological and pedological) studies required during the early stages of the proposed LDCF project.

⁵⁰ The hydrological study that will be conducted as part of activity 1.2.1 will be developed in collaboration with the IGAD managers in order to strengthen complementary of the activities of both projects and benefit from their experience in water resource mapping, assessment and monitoring.

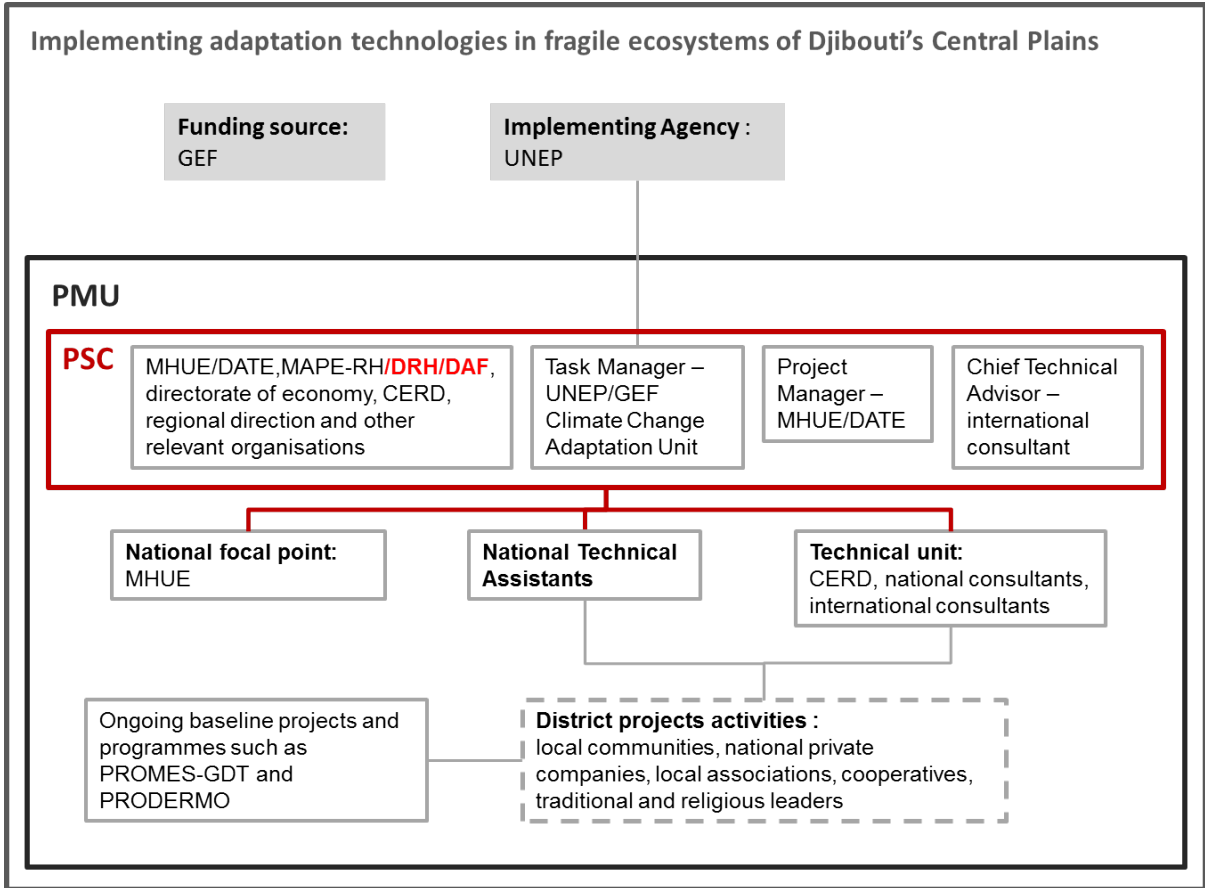


Figure 5: The LDCF project's management structure.

ANNEX I: KEY DELIVERABLE AND BENCHMARKS

See Appendix 3: Results Framework and Appendix 6: Costed M&E in the Project Document.

ANNEX J: TRACKING TOOLS



Climate Change Adaptation - LDCF/SCCF Adaptation Monitoring and Assessment Tool

Goal: Support developing countries to become climate resilient by integrating adaptation measures in development policies, plans, programs, projects and actions
Impact: Reduced absolute economic losses at country level (including loss of life, property and ecosystem services) due to climate change, including variability
Indicator: Economic loss trend over a project period and beyond due to climate change, including variability
Metric: Total property loss per event in \$US/ Number of people affected by event during the project lifetime (Use CRED or Country Data)

Objective 1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level

Outcome and Output Indicators	Metric	Target at CEO Endorsement	Baseline
Outcome 1.2: Reduced vulnerability in development sectors			
		Female Male	Female Male

Indicator 1.2.14	Vulnerability and risk perception index (Score) - Disaggregated by gender	<p>The score for this indicator will have to be assigned based on the results of a conducted survey. The score ranges from 1 to 5 and below are the explanations of the rankings:</p> <ol style="list-style-type: none"> 1. Extreme Vulnerability 2. High Vulnerability 3. Medium Vulnerability 4. Low Vulnerability 5. No Vulnerability 	4	4		2	2
Output 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability							
			Type	Level		Type	Level
Indicator 1.2.1.2	Resilient infrastructure measures introduced to prevent economic losses	Type and level	Flood protection (Gabion walls)	Local level (7 wadis)		One sand levee	Local level (one wadi)
Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas							
			Female	Male		Female	Male

Indicator 1.3.1	Households and communities have more secure access to livelihood assets	Score - Disaggregated by gender. <i>Score for this indicator will have to be assigned based on the results of a conducted survey. The score ranges from 1 to 5 and below are the explanations of the rankings: 1. No access to livelihood assets 2. Poor access to livelihood assets 3. Moderated access to livelihood resources 4. Secure access to livelihood resources 5. Very secure access to livelihood resources</i>	4	4		1	2
Output 1.3.1: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability							
Indicator 1.3.1.1	% of targeted households that have adopted resilient livelihoods under existing and projected climate change	%	70%			0 targeted households	
Objective 2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level							
Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses							
			Female	Male		Female	Male

<p>Indicator 2.2.2</p>	<p>Capacity perception index</p>	<p>Score (1 - 5) to be disaggregated by gender 1. No capacity built 2. Initial Awareness raised (e.g. workshops, seminars) 3. Substantial training in practical application (e.g. vocational training) 4. Knowledge effectively transferred (e.g. passing examination, certification) 5. Ability to apply or disseminate knowledge demonstrated</p>	<p>1</p>	<p>1</p>	<p></p>	<p>3</p>	<p>3</p>
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Output 2.2.1: Adaptive capacity of national and regional centers and networks strengthened to rapidly respond to extreme weather events

<p>Indicator 2.2.1.1</p>	<p>No. of staff trained on technical adaptation themes (disaggregated by gender). Themes: - Monitoring/Forecasting capacity (Early Warning System (EWS), Vulnerability mapping system) - Policy reform</p>	<p>Theme:</p>	<p>Female</p>	<p>Male</p>	<p></p>	<p>Theme:</p>	<p>Female</p>	<p>Male</p>
		<p>Capacity development</p>	<p>5</p>	<p>10</p>		<p>Capacity development</p>	<p>0</p>	<p>0</p>
		<p>Agriculture diversification</p>	<p>10</p>	<p>20</p>		<p>Agriculture diversification</p>	<p>0</p>	<p>0</p>
		<p>Mangrove reforestation</p>	<p>10</p>	<p>20</p>		<p>Mangrove reforestation</p>	<p>0</p>	<p>0</p>

<ul style="list-style-type: none"> -Capacity development Sustainable forest management - Agriculture diversification - Improved resilience of agricultural systems - Strengthening infrastructure - Supporting livelihoods - Mangrove reforestation - Coastal drainage/irrigation system - Community-based adaptation - Erosion control/soil water conservation - Microfinance - Special Programs for women - Livelihoods - Water storage - Information and communication technologies (ICT) and information dissemination - Other 								
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ANNEX K: OFP ENDORSEMENT LETTER

REPUBLIQUE DE DJIBOUTI
UNITE - EGARTE - PAIX

LE MINISTRE DE L'ÉDUCATION, DE LA JEUNESSE ET DE
L'ENVIRONNEMENT (MJE)

DIRECTION DE L'AMÉNAGEMENT DU TERRITOIRE ET
DE L'ENVIRONNEMENT (DATE)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



جمهورية جيبوتي
الوحدة - المساواة - السلام

وزارة الإسكان والتعمير والبيئة

بدارة الشؤون القروية والبيئة

Djibouti, le 05/07/11
N° 288/DATE

Le **DIRECTEUR**

To: Mariam Niamir Fuller
Director, GEF Coordination Office
UNEP, Nairobi

Subject: Endorsement for implementing adaptation technologies in fragile ecosystems of Djibouti's central plains

In my capacity as GEF Operational Focal Point for Djibouti, I confirm that the above project proposal (s) is in accordance with my government's national priorities including the priorities identified in the National Adaptation Plan of Action of Djibouti and our commitment to the relevant global environmental conventions; and (b) was discussed with relevant stakeholders, including the global environmental convention focal points.

I am pleased to endorse the preparation of the above project proposal with the support of the GEF Agency(ies) listed below. If approved, the proposal will be prepared and implemented by UNEP. I request the GEF Agency(ies) to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO endorsement.

The total financing (from GEF, LDCF and/or SCCF) being requested for this project is US\$8,182,350, inclusive of project preparation grant (PPG), if any, and Agency fees for project cycle management services associated with the total GEF grant. The financing requested for Djibouti is detailed in the table below.

Source of Funds	GEF Agency	Focal Area	Amount (in US\$)			
			Project Preparation	Project	Fee	Total
LDCF	UNEP	CC	78,500	7,360,000	743,850	8,182,350
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total GEF Resources			78,500	7,360,000	743,850	8,182,350

Sincerely,

Abdoulhadi Omar
Le Directeur

[Operational Focal Point of GEF and Director of Environment]

Copy to (delete as necessary):
Convention Focal Point for UNEP/CCC
Convention Focal Point for UNEP/WHO
Convention Focal Point for UNEP/WHO
Convention Focal Point for Stockholm (POPs)

ANNEX L: COFINANCING COMMITMENT LETTERS FROM PROJECT PARTNERS

REPUBLIQUE DE DJIBOUTI
Unité - Egalité - Paix

MINISTERE DE L'AGRICULTURE,
DEL'EAU, DE LA PÊCHE, DE L'ÉLEVAGE
ET DES RESSOURCES HYDRAULIQUES

جمهورية جيبوتي
الوحدة - المساواة - السلام

وزارة الزراعة والثروة الحيوانية
والصيد البحري
والمسئولة عن الموارد المائية

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Subject: Ministry of Agriculture, Fisheries, Livestock and Hydraulic Resources of Djibouti-co-financing commitment to the GEF LDCF project entitled "Implementing adaptation technologies in fragile ecosystems of Djibouti's central plains"

The Ministry of Agriculture, Fisheries, Livestock and Hydraulic Resources(MAPE-RH) of Djibouti is responsible for developing and enforcing Djibouti's national environment policies and development strategies in the primary sector and rural areas.

This letter serves to confirm the Ministry of Agriculture, Fisheries, Livestock and Hydraulic Resources's co-financing support of a total of **US\$ 12,800,000** in total to the above-mentioned GEF LDCF project through the following projects for which MAPE-RH is the executing agency for:

- The PROMES-GDT (Programme De Mobilisation Des Eaux De Surface Et De Gestion Durable des Terres) project of a total value of US\$ 3,000,000 for Surface Water Availability Increase and Sustainable Land Management that seeks to improve the livelihoods of rural communities through the sustainable use of natural resources. The programme is focused mainly on three areas, including the Day Forest, Randa-Makarassou and Dora regions in Tadjourah. The PRODERMO project activities includes: i) building and repairing water reservoirs, water retention basins for pastoral plots and micro-dams to increase water availability; and ii) improving fodder availability by establishing fenced grazing plots to exclude livestock and facilitate the recovery of fodder plants. The LDCF project will: i) benefit from lessons learned as well as guidelines developed by the PROMES-GDT; and ii) increase the sustainability of the PROMES-GDT interventions.
- The PRODERMO (Projet de Développement Rural Communautaire et Mobilisation des Eaux) project of a total value of US \$5,800,000 for Rural Communities Development and Water Availability that seeks to increase the access of rural communities to water and strengthen their capacity to manage water and agropastoral resources using a participative approach for the development of local communities. PRODERMO was designed to maximise the synergies of PROMES-GDT activities and to target areas that are not covered by PROMES-GDT, namely, Hanlé, some zones of Tadjourah, and KhorAngar and Oulma in Obock. The PRODERMO project activities includes: i) the construction of water reservoirs, water retention basins, wells, the rehabilitation of boreholes, and the equipping of all of these with solar-powered pumps; ii) the rehabilitation and demarcation of six pastoral plots of 400 ha each; and iii) the development of alternative livelihoods such as

handicrafts. The LDCF project will: i) benefit from the water management infrastructure built by the PRODERMO; ii) increase the climate resilience of the PRODERMO project activities; and iii) promote the use of an EBA approach.

- The Djibouti government's Project of Support to the Development of Date Palm Cultivation (PDPD) of a value of US \$ 500,000 that aims to encourage the cultivation of date palms nationally. The activities of the PDPD include the creation of a laboratory for the asexual propagation of date palm trees to meet the increasing demand. The PDPD will provide valuable scientific information and genetic material that will be beneficial for the LDCF project.
- The Djibouti government's Project on Water Supply and Sanitation in: i) the Rural Areas of Tadjoura, Arta and Ali Sabieh districts; ii) the district centres of Tadjoura and Ali Sabieh (PWSSRA) of a total budget of US \$10,100,000, for which US\$ 3,500,000 will be used as co-financing for this project. This project aims to sustainably improve the living conditions of the populations of the Tadjoura, Arta and Ali Sabieh regions. The project activities include: i) constructing water management infrastructure; ii) conducting public awareness campaigns to promote hygiene; iii) creating Water Management Committees; and iv) training local communities in the maintenance of water management material. The LDCF project will enhance the WSSRA's activities by: i) providing local communities with training on sustainable resource use, alternative livelihoods and accessing microfinance loans to improve the living conditions of the rural populations in Tadjourah; and ii) increasing the climate resilience of the communities' livelihoods and the infrastructure constructed by the PWSSRA project.

PRODERMO, PROMES-GDT, PWSSRA and PDPD are well-aligned with and support the GEF LDCF project entitled *Implementing*

adaptation technologies in fragile ecosystems of Djibouti's central plains which intends to strengthen rural communities' resilience to climate change, particularly floods and droughts, in the regions of Hanlé and Tadjourah in Djibouti.

This collaboration will provide mutual benefits for the PRODERMO, PROMES-GDT, PWSSRA and PDPD and the above-mentioned GEF LDCF project.

We look forward to your continuing cooperation.

Yours sincerely,

IDRISS ABDOU ALI



- CC:** - Ministre MAEPE/RH
- Ministre de l'Habitat et de l'Environnement
- Ministre MEFIP



UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة

联合国环境规划署



Reference : DEPI/GEFCCAU

29 October, 2013

Subject: UNEP co-financing commitment to the LDCF project "*Implementing adaptation technologies in fragile ecosystems of Djibouti's central plains*"

UNEP helps developing countries to reduce vulnerabilities and build resilience to the impacts of climate change. UNEP builds and strengthens national institutional capacities for vulnerability assessment and adaptation planning, and supports national efforts to integrate climate change adaptation measures into development planning and ecosystem management practices. The project entitled "*Implementing adaptation technologies in fragile ecosystems of Djibouti's central plains*" is built upon and contributes to the on-going projects and programs implemented by UNEP. More specifically, it will be aligned and build upon and provide mutual benefits to the following ongoing initiatives:

- The UNEP-IUCN-WAMIP project on "*Enhancing the awareness and knowledge of pastoralism*" seeks to increase knowledge on pastoralism as a terrestrial ecosystems land management option and its potential contribution to long-term and adaptive management of climate change vulnerable landscapes in Africa, Europe, Asia and South America. The project seeks to raise the political attention around pastoralism as valued land management option and to prepare policy frameworks for technical and advisory support to countries on including pastoralism in design, planning and implementation of ecosystem approach-based land-use management and national Green Economy agendas. The project is well aligned with the LDCF project particularly the third component with a focus on sustainable and climate-resilient livelihoods.
- The preparatory grant for the UNEP project "*Using Ecosystem-based Adaptation (EbA) for Food Security in agriculture-dominated landscapes in Africa (EbAFoS)*" will provide actions focused towards building ecological resilience of food systems and enhance food security through Ecosystem-based Adaptation (EbA) approaches in countries in Sub Saharan Africa which the Djibouti LDCF project will benefit from.
- The UNEP-European Commission project on "*Building Capacity for Coastal Ecosystem-based Adaptation in Small Island Developing States (SIDS)*" will assist SIDS and their regions develop and apply ecosystem-based adaptation approaches to maintain and enhance the resilience of tropical coastal ecosystems and the services they provide to coastal communities. Although the project's geographical focus is on SIDS in Africa and the Caribbean, the project will contribute parallel co-financing through some of the planning and ecosystem management tools developed as part of its expected results.

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UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة
联合国环境规划署



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Please find below the budgets for these UNEP supported / led projects which the LDCF project will benefit from.

Project/ Network	Budget (US \$)	Duration	Type of co-financing
UNEP-IUCN-WAMIP	269,993	2013-2014	grant
UNEP Food Security	600,000	2013 -2014	grant
UNEP-EC SIDS	500,000	2013-2015	grant
Total	1,369,993		

This letter serves to confirm UNEP's commitment of **USD 1,369,993** to the above-mentioned GEF LDCF project to provide co-financing through the projects detailed here for the amounts outlined in the table.

We look forward to your continued cooperation.

Yours sincerely,

Keith Alverson
Coordinator, Climate Change Adaptation & Terrestrial Ecosystem Branch

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ANNEX M: ENVIRONMENTAL AND SOCIAL SAFEGUARDS CHECKLIST

As part of the GEF’s evolving Fiduciary Standards, implementing agencies have to address “Environmental and Social Safeguards”. The checklist was developed with the following steps as guidance:

- STEP 1: Initially assess E&S Safeguards as part of PIF development. The checklist is to be submitted for the PRC.
- STEP 2: Checklist is reviewed during the PPG phase and updated as required.
- STEP 3: Final checklist submitted for PRC showing which activities are being undertaken to address issues identified.

Project Title	Implementing adaptation technologies in fragile ecosystems of Djibouti's Central Plains		
GEF project ID and UNEP ID/IMIS Number	GEF Agency Project ID: UNEP ID: 891	Version of checklist	One
Project status (preparation, implementation, MTE/MTR, TE)	Preparation	Date of this version	September 2013
Checklist prepared by (Name, Title, and Institution)	Ermira Fida, Head, GEF Adaptation Unit, DEPI		

In completing the checklist both short- and long-term impact will be considered.

Section A: Project location:

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	<i>Yes/No/N.A.</i>	<i>Comment/explanation</i>
- Is the project area in or close to -		
- a densely populated area	No	Most of the project interventions will be undertaken in rural areas which are not densely populated. Some interventions, however, will occur close to Tadjourah Ville. The specific focus of the activities occurring close to Tadjourah Ville are to improve the resilience of local communities to climate change. No negative environmental or social impacts associated with proximity to Tadjourah Ville are anticipated during project implementation. Monitoring and evaluation will be undertaken during the standard M&E periods.
- a cultural heritage site	No	
- a protected area	No	
- a wetland	No	
- mangroves	Yes	There are no mangroves in the project sites at present. However, the project will pilot the re-establishment of mangrove forest at a historical mangrove site, Kalaf, in Tadjourah.
- an estuarine zone	No	
- a buffer zone of a protected area	No	

- a special area for protection of biodiversity	No	
- Will the project require temporary or permanent support facilities?	No	
<i>If the project is anticipated to affect any of the above areas an Environmental Survey will be needed to determine if the project is in conflict with the protection of the area or if it will cause significant disturbance to the area.</i>		

Section B: Environmental impacts

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	<i>Yes/No/N.A.</i>	<i>Comment/explanation</i>
- Are ecosystems related to the project fragile or degraded?	Yes	The central plains ecosystems are considered fragile and as such are targeted for rehabilitation and resilience–building, both on the coast and inland.
- Will the project cause any loss of important and/or fragile ecosystems or ecological and economic functions due to construction of infrastructure?	No	Substantial construction of infrastructure will take place in the project (levees and gabion walls). This infrastructure will not negatively affect any fragile or important ecosystems. Instead, it will protect the ecological functioning of degraded ecosystems by reducing erosion and desertification. Consequently, no mitigation measures are required because no negative effects are anticipated.
- Will the project cause impairment of ecological opportunities?	No	The project seeks to increase ecological opportunities.
- Will the project cause any increase in peak and flood flows? (including from temporary or permanent waste waters)	No	The project seeks to reduce flooding risk.
- Will the project cause air, soil or water pollution?	No	No pollution will be generated by the project activities.
- Will the project cause soil erosion and/or siltation?	No	Project activities will increase soil stability and water infiltration by planting trees in the project areas, thereby reducing erosion and siltation.
- Will the project result in increased waste production?	No	The project activities will not cause any increase in waste production.
- Will the project results in the production of hazardous waste?	No	No hazardous waste will be generated by the project activities.
- Will the project pose any threat to local ecosystems due to invasive species?	No	No invasive species will be used in the project. Moreover, <i>Prosopis</i> will be removed in some sites to plant indigenous trees.
- Will the project result in increased greenhouse gas emissions?	No	Project activities are likely to reduce the atmospheric concentration of greenhouse gases in project sites. This will be achieved by replanting mangroves and multiple other tree species and consequently increasing soil and plant carbon sequestration. Additionally, to the project will re-establish mangroves, which are efficient carbon sinks.
- Other environmental issues, e.g. noise and traffic	No	
<i>Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily both in the short and long-term, can the project go ahead.</i>		

Section C: Social impacts

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	<i>Yes/No/N.A.</i>	<i>Comment/explanation</i>
- Does the project respect internationally proclaimed human rights including dignity, cultural property and uniqueness and rights of indigenous people?	Yes	All project interventions have been developed in accordance with internationally proclaimed human rights, in accordance with UN guidelines. In addition, all activities were developed in consultation with stakeholders to ensure that no rights or laws are infringed upon by the proposed activities.
- Are property rights such as land tenure recognized by the existing laws in affected countries?	Yes	Land tenure arrangements are clearly defined and both traditional and state-based rights are recognized.
- Will the project cause social problems and conflicts related to land tenure and access to resources?	No	Project risk management will also include conflict risk management systems concerning customary rights and the sharing of ecosystem services.
- Does the project incorporate plans to inform and consult affected stakeholders?	Yes	All on-the-ground activities, except those involving hard infrastructure, are implemented by local communities. They are also preceded by and include stakeholder consultations, training and public awareness campaigns.
- Will the project affect the state of the targeted country's (-ies') institutional context?	Yes	The project will strengthen institutions in Djibouti in order to integrate adaptation to climate change into management plans. National and local governments will be trained in risk evaluation and adaptation to climate change. Additionally, knowledge sharing on adaptation initiatives at the national and local scales will be increased by encouraging meetings of inter-ministerial committees, creating websites and developing other communication tools.
- Will the project result in a reduction of access to beneficial ecosystem services (e.g. reduction in water supply or loss of access to fisheries)?	No	The project is designed to enhance ecosystem services and access to resources. This includes reduced flooding and siltation at intervention sites as a result of the project activities.
- Will the project modify technologies or land-use activities that may lead to changes in present social and economic activities?	Yes	The project seeks to enhance the efficiency of current land-use systems to increase the social and economic benefits of these systems.
- Will the project cause dislocation or involuntary resettlement of people?	No	No translocation of people is required for the project activities, and local communities will be involved in all on-the-ground implementation.
- Will the project cause uncontrolled in-migration (short- and long-term) with opening of roads to areas and possible overloading of social infrastructure?	No	No new roads will be built through project activities, and no movement of people is anticipated.
- Will the project result in increased local or regional unemployment?	No	No long-term change in formal employment as a result of project activities is anticipated. Community members will be employed for short periods to achieve specific project objectives, where necessary. Livelihoods of local

		communities will be developed in project sites in order to improve community resilience to the effects of climate change. Additionally, microfinancing for business development will be promoted.
- Does the project include measures to reduce/remove the risk of forced or child labour?	Yes	The project conforms to all national and international guidelines and laws regarding forced labour. Extensive community engagement will prevent the use of forced labour, and all required labour (short term employment only, for meeting specific objectives) will be provided through community engagement and remunerated in accordance with national law.
- Does the project include measures to ensure a safe and healthy working environment for workers employed as part of the project?	Yes	The project will conform to all national and international guidelines and laws regarding health and safety for workers employed as part of the project. Community training will ensure that health and safety regulations are understood.
- Will the project affect recreational opportunities?	No	Areas used primarily for recreational activities will not be included in the project.
- Will the project negatively affect indigenous people's livelihoods or belief systems?	No	All project implementation will be carried out after stakeholder consultation and in accordance with local belief systems. Livelihoods of people in project sites will be improved through the project activities.
- Will the project disproportionately affect women or other disadvantaged or vulnerable groups?	No	The project will help to reduce the effects of climate change on the most vulnerable groups, including women, farmers and pastoralists.
- Will the project involve and or be complicit in the alteration, damage or removal of any critical cultural heritage?	No	No cultural heritage will be affected by project operations.
- Does the project include measures to avoid corruption?	Yes	All project disbursements will be monitored by UNEP administrative structures, and regular reporting by the project management team will ensure financial and administrative transparency is maintained throughout the project lifetime.
<i>Only if it can be carefully justified that any negative impact from the project can be avoided or mitigated satisfactorily both in the short and long-term, can the project go ahead.</i>		

Section D: Other considerations

If negative impact is identified or anticipated the Comment/Explanation field needs to include: Project stage for addressing the issue; Responsibility for addressing the issue; Budget implications, and other comments.

	<i>Yes/No/N.A.</i>	<i>Comment/explanation</i>
- Does national legislation in the affected country (-ies) require EIAs and/or SIAs to be conducted before commencement of this type of activity?	Yes	EIAs and SIAs will be conducted first at the commencement of the project implementation stage.
- Is there sufficient national capacity to ensure effective implementation of EIA and/or SIA requirements?	Yes	The responsibility for conducting EIAs and SIAs lies with the executing agency partner (MHUE).
- Is the project addressing issues which are already being addressed by other approaches and projects?	No	Project activities are complementary to the identified baseline projects. Additionally, during the PPG, meetings were held with the management teams of other adaptation projects ongoing in Djibouti, to ensure complementarity with their activities.
- Will the project components generate or contribute to cumulative or long-term effects on the environment or local communities?	No	No negative effects are anticipated. Positive effects will accrue.
- Is it possible to isolate the effects of this project so as to monitor E&S effects?	Yes	Indicators were developed during the PPG phase to monitor the E&S effects of the project, and additional indicators may be developed during project implementation to ensure relevant aspects of the project are monitored.

ANNEX N: ACRONYMS AND ABBREVIATIONS



AAH	Agropastoral Association of Hanlé
AF	Adaptation Fund
AFF	African Forest Forum
AFDB	African Development Bank
AFSED	Arab Fund for Social and Economic Development
ANM	Agence Nationale de Météorologie
APP	Agropastoral Plot
AU	African Union
CBD	Convention for Biological Diversity
CCC	Climate Change Committee
CCD	United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
CDNCC	Comité Directeur National des Changements Climatiques
CENSAD	Community of Sahel-Saharan States
CERD	Centre d'Etude et de Recherche de Djibouti
CRIPEN	Centre de Recherche, Information et Production de l'Education Nationale Centre of Research, Information and Production of the National Education ministry
CTA	Chief Technical Advisor
CTDD	Comité Technique pour le Développement Durable
DAF	Directorate of Agriculture and Forestry
DATE	Directorate on Land Use and the Environment/Direction de l'Aménagement du Territoire et de l'Environnement
DEPI	Department of Environmental Policy Implementation
DRH	Direction on Rural Hydraulics
DTIE	Division for Industry, Technology and Economics
EA	Executing agency
EbA	Ecosystem-based Adaptation
EIA	Environment Impact Assessments
EMINWA	Environmentally-sound Management of Inland Waters Programme
EOU	Evaluation and Oversight Unit
EU	European Union
EWS	Early Warning System
FAO	Food and Agricultural Organisation
FEM	Global Environment Fund
FFEM	Fonds Français pour l'Environnement Mondial
FIDA	International Fund for Agriculture Development/ Fond International pour le Développement de l'Agriculture
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GFDRR	Global Facility For Disaster Reduction and Recovery
GGW	Great Green Wall
IA	Implementing Agency
IC	International Consultant
IDA	International Development Association
IDB	Islamic Development Bank
IGAD	Inter-governmental Authority on Development

INC	Initial National
INDS	National Main Development Policy
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resources Management
LCE	National Law on Environment
LDCF	Least Developed Countries Fund
M&E	Monitoring and Evaluation
MAPE-RH	Ministry of Agriculture, Fisheries, Livestock and Hydraulic Resources/Ministère de l'Agriculture, de la Pêche et de l'Elevage chargé des Ressources Hydrauliques
MDG	Millennium Development Goals
MESDAP	Surface Water Recharge for Agropastoral Development programme
MHUE	Ministry of Habitat, Urbanism and Environment / Ministère de l'Habitat, de l'Urbanisme, de l'Environnement et de l'Aménagement du Territoire
MPA	Marine Protected Areas
NAPA	National Action Plan for the Environment
NDRAMS	Natural Disaster Risk Assessment and Monitoring System
NEA	National Executing Agency
NGO	Non-Governmental Organisation
NLE	National Law on Environment/Loi cadre sur l'Environnement
NTA	National Technical Assistants
NTFP	Non-timber forest products
OCHA	Coordination of Humanitarian Affairs
ONT	Office National de Tourisme
PDPD	Projet de Développement des Palmiers Dattiers
PERSGA	Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden
PIP	Public Investment Programme
PIR	Project Implementation Review
PM	Project Manager
PMCWG	Project Managers Coordination Working Group
PMF	Associé au Programme de Petites Subventions – Fonds pour l'Environnement Mondial
GEF	
PMU	Project Management Unit
PNDS	National Programme for Sanitary Development
PNLD	National Programme against Desertification/ Programme National de Lutte contre la Diversification
PNSA	National Food Security Programme
PREPUD	Programme de Réduction de la Pauvreté Urbaine à Djibouti
PRODERMO	Projet de Développement Rural Communautaire et Mobilisation des Eaux
PROMES-GDT	Programme De Mobilisation Des Eaux De Surface Et De Gestion Durable Des Terres
PROVIA	Programme of Research on Climate Change Vulnerability, Impacts and Adaptation
PRSP	Poverty Reduction Strategy Paper
PSC	Project Steering Committee
PSSA	Special Programme for Food Security
PWRSSA	Project on Water Supply and Sanitation in: i) the Rural Areas of Tadjourah, Arta and Ali Sabieh districts; ii) the district centres of Tadjourah and Ali Sabieh

RHT	Rainwater Harvesting Technologies
RLACC	Rural Livelihoods Adaptation to Climate Change in the Horn of Africa
SNIFD	National Policy for the Integration of Women into Development/ Politique Nationale pour matière d'intégration de la femme dans le développement
SMART	Specific, measurable, achievable, relevant and timebound
TCP	Technical Cooperation Programme
TM	Task Manager
ToR	Terms of Reference
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Convention on Climate Change
UNICEF	United Nations Children's Fund
WB	World Bank
WFP	World Food Programme

ANNEX O: COMPARISON OF THE BUSINESS-AS-USUAL SITUATION AND ALTERNATIVE ADAPTATION SCENARIOS.

	Business-As-Usual		Adaptation alternative scenario
Problem description	<p>The aridity of Djibouti results in its water sector having limited capacity to meet the requirements of the country. Because most farmers do not have irrigation systems and rely on rainfall, Djibouti’s national water insecurity greatly reduces agricultural productivity. Additionally, natural ecosystems are being degraded by multiple factors including overgrazing by livestock. Ecosystem degradation is exacerbated by demographic factors. These include the rapid rate of rural-urban migration and the settling of nomadic pastoralists, which both further increase the localised demand for natural resources.</p> <p>Djibouti is particularly vulnerable to climate change-induced hazards that are already detrimental to water, environment, agriculture and health sectors. Climate change is predicted to increase the frequency and duration of drought periods. Additionally, the frequency and intensity of floods will increase. These climate change effects are expected to further decrease water availability and increase desertification. Furthermore, the government has little institutional and technical capacity to integrate adaptation to climate change into development planning.</p>	⇒	<p>To address this problem, UNEP is facilitating the implementation of an adaptation project in Djibouti, based on priorities identified during the NAPA process. The interventions of the LDCF project will thus include: i) increasing water availability and resilience to floods; ii) restoring natural ecosystems; iii) developing and diversifying climate-resilient livelihoods; and iv) increasing the capacity of the government to integrate adaptation into development planning.</p>
Project outcomes	<p>Outcome 1</p> <ul style="list-style-type: none"> - There is a large deficit between water availability and population needs. - There are an insufficient number of boreholes, dams and reservoirs to adequately distribute water resources in Hanlé and Tadjourah. - The existing infrastructure is often inappropriate for local community circumstances. - Local communities have a limited capacity to operate and maintain borehole equipment. - There is limited information on groundwater location, quantity and quality as well as surface water availability, particularly in Hanlé. 	⇒	<p>The LDCF project will contribute to improve the baseline situation, particularly in relation to increase of water availability, by:</p> <ul style="list-style-type: none"> - Constructing hard infrastructures (levees and gabion walls) to increase the resilience of local communities to droughts. - Constructing hard infrastructures (boreholes and water-reservoirs) to increase the availability of water for drinking and irrigation. - Undertaking hydrological studies to generate detailed information on the availability and quality of ground and surface water in Hanlé and Tadjourah. - Installing hydrological monitoring equipment to increase the availability of information related to water resources. - Investigate the potential for use of grey water for

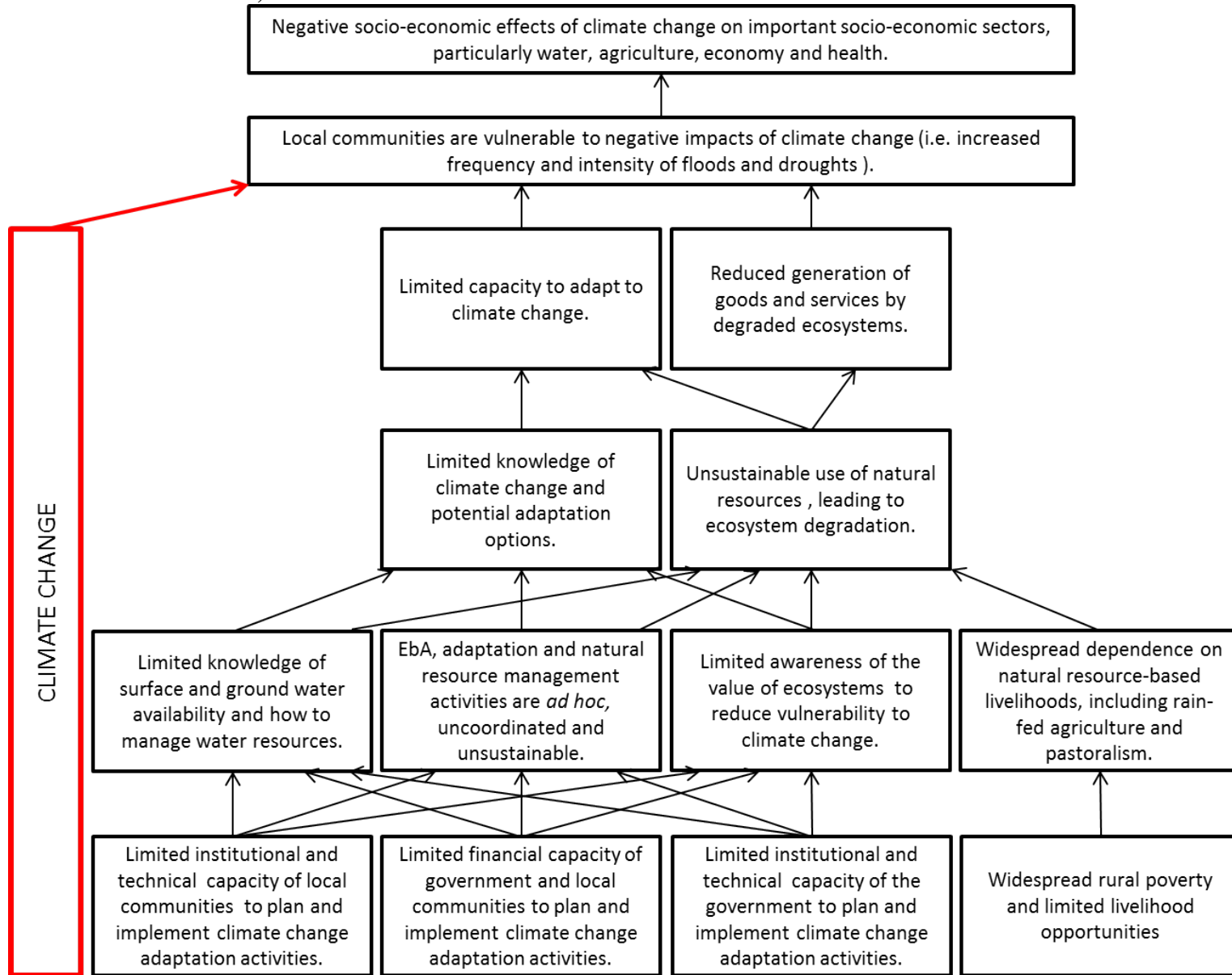
	<p>Outcome 2</p> <ul style="list-style-type: none"> - Djibouti ecosystems are extremely degraded because of multiple causes including overgrazing by livestock, inappropriate agricultural practices and deforestation woodfuels such as charcoal and firewood. - Degradation of ecosystems such as mangroves and <i>Acacia</i> woodlands results in negative effects such as increased soil erosion, desertification, sedimentation of surface waters and invasion by alien plant species. - The observed consequences of desertification include a reduction in species diversity and plant biomass as well as a reduction in the overall productivity of the dryland ecosystems. 		<p>irrigation.</p> <p>The LDCF project will contribute to improve the baseline situation, particularly in relation to restoration of natural ecosystems, by:</p> <ul style="list-style-type: none"> - Engaging with local communities to restore degraded ecosystems that provide a buffer against the predicted effects of climate change with climate-resilient species. - Removing <i>Prosopis</i> (invasive species) in the identified restoration areas and replanting <i>Acacia</i> woodlands (buffer ecosystem). - Replanting mangrove ecosystem in a pilot site. - Increasing ground water recharge through ecosystem restoration and the use of rainwater harvesting technologies such as <i>Zai</i>, contoured earthen bunds and ridged contours. - Increasing local communities' awareness on the importance of <i>Acacia</i> woodlands and mangroves.
	<p>Outcome 3</p> <ul style="list-style-type: none"> - Increased frequency and severity of drought has led to the decline of pastoral resources and the loss of a large proportion of Djibouti's national livestock herd, particularly in Hanlé. - Poverty in Djibouti is often a result of communities having few livelihood options. - The development of alternative livelihoods is hindered by limitations in technical knowledge and capital investments. - There is a significant gender inequality in rural areas. 		<p>The LDCF project will contribute to improve the baseline situation, particularly in relation to development of climate-resilient livelihoods, by:</p> <ul style="list-style-type: none"> - Establishing large agropastoral plots that will provide each family with half a hectare of productive land for fodder production. These agropastoral plots will be climate-proofed by planting a wide range of plant species that are drought resilient and salt tolerant. - Implementing comprehensive farmer packages – including best available drip irrigation technologies – that generate sustainable agri-businesses. - Training agropastoralists on climate-resilient agropastoral practices. - Training local communities in the development of apiculture. - Training of women in the development of aviculture and handcraft activities. - Developing and implementing a public awareness campaign on the benefits of these alternative livelihood practices. - Diversifying local livelihoods to increase the

			<p>resilience of the local communities by reducing reliance on a narrow range of resources such as pasture lands.</p> <ul style="list-style-type: none"> - Diversifying agricultural practises will decrease poverty and increase food security. - Training agropastoralists on the use of rainwater harvesting technologies to increase water infiltration surrounding the agropastoral plots. - Investigating options to increase access of agropastoralists to finance from local banks and microfinance institutions.
	<p>Outcome 4</p> <ul style="list-style-type: none"> - There is limited coordination between the various environmental projects in Djibouti, which is partly attributable to a lack of knowledge-sharing systems. - A Climate Change Committee was created in 1999 according to a presidential decree⁵¹. However, regular meetings of this committee are not held. - The main factor constraining the success and expansion of agropastoralism is the limited technical capacity and knowledge of the local communities 	<p>→</p>	<p>The LDCF project will contribute to improve the baseline situation, particularly in relation to institutional capacity for climate change adaptation, by:</p> <ul style="list-style-type: none"> - Hosting an inter-ministerial workshop of the Climate Change Committee. - Improving coordination between ongoing and future environmental projects in the country by developing communication and knowledge sharing. - Studying the activities' results on the resilience of local communities to climate change to guide the replication and upscaling of project activities. - Supporting the development of an EWS in Tadjourah. - Increasing the institutional capacity of local communities through the establishment of agropastoral management committees and agropastoral cooperatives to promote, develop and maintain the new climate resilient livelihoods developed. - Investigating different options for agropastoralists to get their agricultural production to market timeously. - Increasing the capacity of MHUE to conduct public awareness campaigns on how climate change is affecting Djibouti. - Training teachers in primary schools on appropriate adaptation technologies for managing climate change

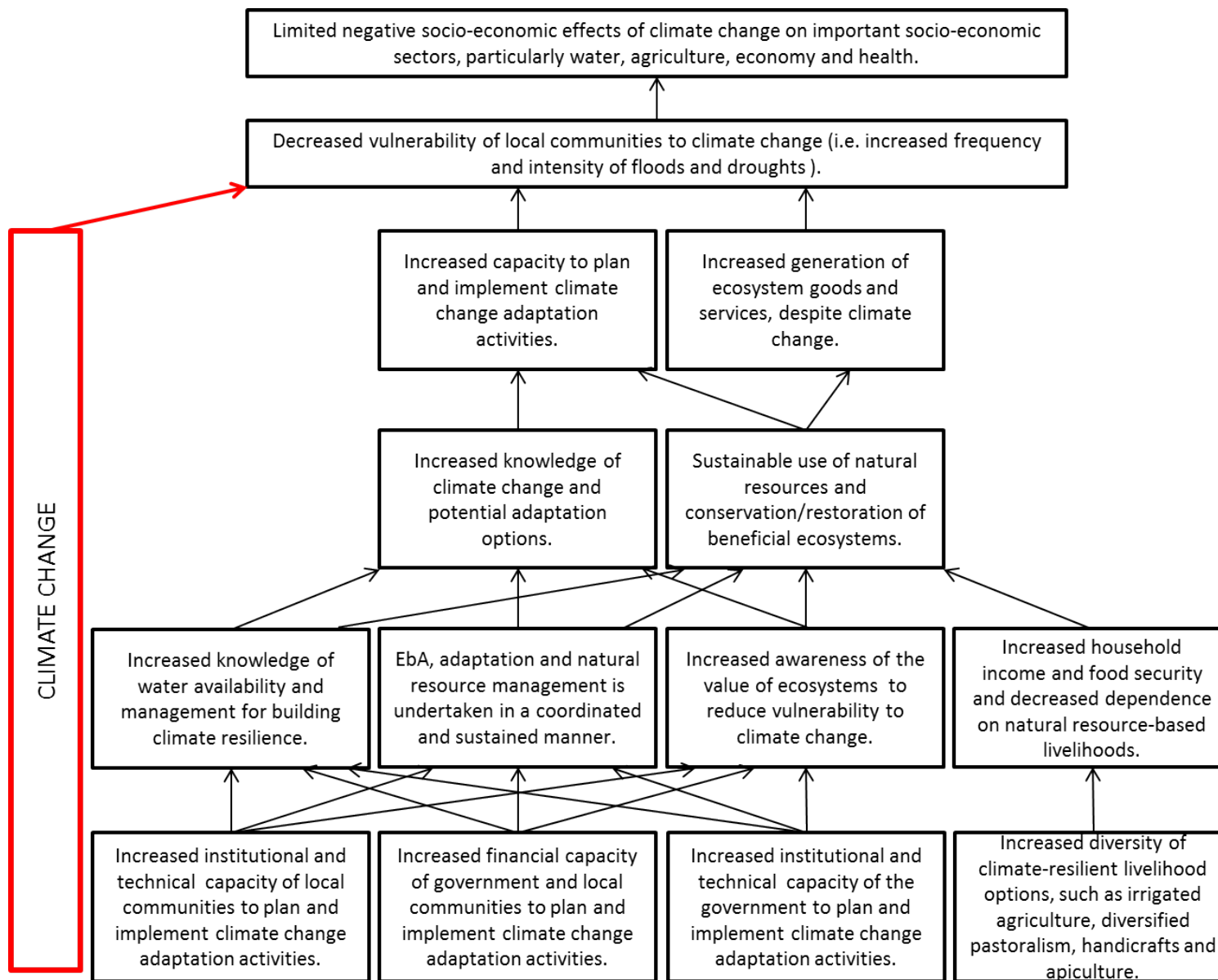
⁵¹ Order n°99-0277/PR/MATETA.

			effects in Djibouti.
Cost	Business-As-Usual Development Cost		Additional Adaptation Cost
Financed by	GoD, AfDB, IDB, GFDRR		LDCF

ANNEX P: THEORY OF CHANGE, PROBLEM AND SOLUTION TREES



Annex P.1: Problem Tree



Annex P.2: Solution Tree

ANNEX Q: LINK BETWEEN THE BASELINE PROJECTS AND THE LDCF PROJECT

Baseline projects and intervention sites	Goals and activities	Climate change hazards affecting the baseline project area	Impacts to the baseline projects and targeted populations as a result of climate change	Adaptation measures supported by the proposed LDCF project	How the proposed LDCF project will contribute towards increasing the resilience of the baseline project
<p>PROMES-GDT</p> <ul style="list-style-type: none"> - Day area in Tadjourah - Barra area in Arta - South West of Dikhil 	<p>Improve livelihood of pastoral communities by promoting sustainable management of natural resources, including the following activities:</p> <ul style="list-style-type: none"> - Develop a programme to increase water availability; - Build water management infrastructure (e.g. water tanks and micro-dams); - Increase national capacity for the management of surface water and land use. 	<p>Increased frequency and intensity of drought events.</p> <p>Increased variability and unpredictability of precipitation.</p>	<p>Decreased availability and quality of water resources for human population and livestock.</p> <p>Increased damage to water management infrastructure as a result of sedimentation and physical impacts of floods.</p> <p>Reduced availability and quality of water as a result of drought-related effects such as salinisation and excessive abstraction of groundwater.</p> <p>Reduced quality of water as a result of flood-related effects such as sedimentation, pollution and waterborne diseases.</p> <p>Reduced resilience and productivity of fragile ecosystems – including mangroves, woodlands, rangelands and riparian areas – as a result of changing rainfall and temperature patterns as well as the physical impact of floods.</p>	<p>Restoration of degraded watersheds, pastoral rangelands, riparian areas and mangroves using a combination of EbA and hard engineering techniques.</p> <p>Detailed hydrological and pedological studies to assess availability and quality of water resources in the project districts, including consideration of climate change effects.</p> <p>Rehabilitation and construction of climate-resilient water storage and supply infrastructure.</p> <p>Rehabilitation and construction of climate-resilient flood protection infrastructure, including gabion walls and sand levees.</p>	<p>Increased resilience of water management infrastructure to climate and climate change-related hazards such as droughts, floods and erratic rainfall.</p> <p>Scientifically rigorous information to guide the location and appropriate design of sustainable, climate-resilient water management infrastructure.</p> <p>Increased knowledge and technical capacity at national and local levels to plan and implement sustainable, climate-resilient water management practices under conditions of climate change.</p> <p>Increased knowledge and technical capacity at national and local levels to plan and implement locally appropriate and cost-effective adaptation measures, including both EbA and hard engineering approaches.</p>
<p>PRODERMO</p> <ul style="list-style-type: none"> - Eastern area of Obock 	<p>Increase the access of rural communities to water and increase capacity to manage</p>	<p>Increased frequency and intensity of</p>	<p>Increased damage to water management infrastructure as a result of sedimentation and</p>	<p>Detailed hydrological and pedological studies to assess availability and quality of</p>	<p>Increased resilience of water management infrastructure to climate and climate change-</p>

<ul style="list-style-type: none"> - Central area of Dikhil - Coastal area of Tadjourah 	<p>natural resources such as water and pastoral rangelands through activities such as:</p> <ul style="list-style-type: none"> - Increase ground and surface water availability for human consumption, agriculture and livestock by: building water management infrastructure (e.g. water tanks, micro-dams, wells, boreholes) - Increase the productivity of pastoral areas by restoring degraded pastoral areas; - increase diversity of rural livelihoods, including through establishment of pilot projects based on development of fisheries and craft markets; - Increase national, regional and local capacity for the formulation and implementation of the annual water and pastoral resources management plan in the intervention sites. 	<p>drought events.</p> <p>Increased frequency and intensity of floods.</p> <p>Increased variability and unpredictability of precipitation.</p>	<p>physical impacts of floods.</p> <p>Reduced availability and quality of water as a result of drought-related effects such as salinisation and excessive abstraction of groundwater.</p> <p>Reduced quality of water as a result of flood-related effects such as sedimentation, pollution and waterborne diseases.</p> <p>Reduced resilience and productivity of fragile ecosystems – including mangroves, woodlands, pastoral rangelands and riparian areas – as a result of changing rainfall and temperature patterns as well as the physical impact of floods.</p>	<p>water resources in the project districts, including consideration of climate change effects.</p> <p>Detailed geological studies to assess the productivity and suitability for grazing of pastoral rangelands, including consideration of climate change effects.</p> <p>Rehabilitation and construction of climate-resilient water storage and supply infrastructure.</p> <p>Rehabilitation and construction of climate-resilient flood protection infrastructure, including gabion walls and sand levees.</p> <p>Establishment and training of management committees to operate and maintain water management infrastructures sustainably and under climate change conditions.</p> <p>Training of stakeholders to implement sustainable and climate-resilient agropastoralism activities.</p> <p>Development of sustainable, climate-resilient alternative livelihoods such as handcrafts, apiculture and</p>	<p>related hazards such as droughts, floods and erratic rainfall.</p> <p>Scientifically rigorous information to guide the location and appropriate design of sustainable, climate-resilient water management infrastructure.</p> <p>Increased resilience of pastoral rangelands to climate change effects through reducing unsustainable management practices and providing alternative livelihood options.</p> <p>Increased cost-effectiveness of PRODERMO investments through providing information on successes and failures of alternative livelihood options and best-practice implementation protocols under climate change conditions.</p>
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				aviculture.	
PWSSRA - Rural areas of Tadjourah, Arta and Ali Sabieh	Increase access to sanitation and availability of water for people and livestock through activities such as: - Construction of water tanks, boreholes and water points; - Construction of school latrines; - Implementation of public awareness campaigns on hygiene; - Provision of water management infrastructure; and - Building of technical capacity for water management and training of management committees for drinking water and sanitation.	Increased frequency and intensity of drought events. Increased frequency and intensity of floods. Increased variability and unpredictability of precipitation.	Increased damage to water management infrastructure as a result of sedimentation and physical impacts of floods. Reduced availability and quality of water as a result of drought-related effects such as salinisation and excessive abstraction of groundwater. Reduced quality of water as a result of flood-related effects such as sedimentation, pollution and waterborne diseases.	Introduction of techniques for recycling of grey water in urban areas. Establishment of water management committees and increased awareness on the sustainable use and maintenance of water resources and water management infrastructure. Detailed hydrological and pedological studies to assess availability and quality of water resources in the project districts, including consideration of climate change effects. Restoration of degraded watersheds, riparian areas and mangroves using a combination of EbA and hard engineering techniques.	Increased national and local technical capacity for sustainable management of water resources and infrastructure, including through the establishment of efficient local water management committees and appropriate training tools. Increased resilience of water management infrastructure to climate and climate change-related hazards such as droughts, floods and erratic rainfall. Scientifically rigorous information to guide the location and appropriate design of sustainable, climate-resilient water management infrastructure.
PDPD	Promote the sustainable cultivation of date palm trees in arid areas through activities such as: - Increased protection of date palm trees; - Creation of a laboratory for in-vitro propagation to support increased cultivation of date palm trees; and - Increased genetic diversity of date palm trees.	Increased frequency and intensity of drought events. Increased frequency and intensity of floods.	Reduced productivity and rate of establishment of date palm trees as a result of drought and reduced availability of water for irrigation. Increased mortality of date palm trees as a result of flood damage.	Establishment and demarcation of sustainable, productive agropastoral plots, including the provision of appropriate agricultural inputs and irrigation infrastructure. Construction and rehabilitation of hard infrastructure such as gabions and levees for flood protection. Provision of training on	Increased productivity and rate of establishment of date palm trees as a result of improved access to irrigation. Increased productivity and rate of establishment of date palm trees as a result of reduced impact of floods. Increased capacity for sustainable cultivation of date palm trees within agropastoral plots.

				<p>climate-resilient agropastoral practices and appropriate crop choices, including planting date palm trees.</p> <p>Introduction of appropriate drought- and salt-tolerant plant species to agropastoral plots, including date palm trees as well as other beneficial plant species.</p>	
UNEP-IUCN-WAMIP project	<p>Establish a process for policy reform to support the transition of the pastoralism sector towards a green economy and to achieve its social, economic and environmental potential through the following measures:</p> <ul style="list-style-type: none"> - Increase knowledge and awareness of policymakers of pastoralism as a land management option; - Establish protocols for long-term adaptive management of landscape; and - Prepare policy frameworks to support the inclusion of pastoralism into relevant land management policies. 	<p>Increased frequency and intensity of drought events.</p> <p>Increased frequency and intensity of floods.</p>	<p>Reduced productivity and economic returns from pastoralism as a result of reduced water availability and reduced forage production.</p>	<p>Establishment and demarcation of sustainable, productive agropastoral plots, including the provision of appropriate agricultural inputs and infrastructure to supply and store water.</p> <p>Training of stakeholders to implement sustainable and climate-resilient agropastoralism activities.</p> <p>Development of sustainable, climate-resilient alternative livelihoods such as handcrafts, apiculture and aviculture.</p>	<p>Scientifically rigorous information to guide the development of pastoral activities in Hanlé and Tadjourah.</p> <p>Increased resilience of pastoral rangelands to climate change effects by reducing unsustainable management practices and providing alternative livelihood options.</p> <p>Increased local and national capacity to implement sustainable and climate-resilient agropastoral practices.</p>
UNEP-EbAFoS project	<p>Build resilience of food production systems and enhance food security using EbA approaches in countries in Sub Saharan Africa, including the following activities:</p> <ul style="list-style-type: none"> - Enhancing the links between science and policy by 	<p>Increased frequency and intensity of drought events.</p> <p>Increased frequency and intensity of floods.</p>	<p>Reduced food security and agricultural productivity, particularly in rainfed agriculture, as a result of drought, reduced annual rainfall and unpredictable onset of rainfall.</p> <p>Reduced food security and</p>	<p>Research projects and scientific publications on the effects of EbA interventions on the local communities in the intervention sites to provide protocols, cost-effectiveness estimates and increase knowledge base for EbA.</p>	<p>Reduced food insecurity in Hanlé and Tadjourah through the establishment and demarcation of sustainable, productive agropastoral plots, including the provision of appropriate agricultural inputs and infrastructure to supply and store water.</p>

	<p>monitoring and evaluating the effect on food security of demonstration EbA approaches;</p> <ul style="list-style-type: none"> - Strengthening of government capacities to integrate EbA approaches into national food security policies and plans; and - Dissemination of lessons learned on EbA to a wider African audience. 		<p>agricultural productivity as a result of physical damage from climate-related hazards such as floods.</p> <p>Ongoing degradation of vulnerable ecosystems due to unsustainable exploitation of natural resources during periods of food insecurity and poverty.</p>	<p>Development of sustainable, climate-resilient alternative livelihoods such as handcrafts, apiculture and aviculture.</p> <p>Provision of training on climate-resilient agropastoral practices and appropriate crop choices.</p> <p>Introduction of appropriate drought- and salt-tolerant plant species to agropastoral plots, including date palm trees as well as other beneficial plant species.</p>	<p>Increased resilience of ecosystems to climate change effects through reducing unsustainable management practices and providing alternative livelihood options.</p> <p>Increased knowledge and technical capacity at national and local levels to plan and implement locally appropriate and cost-effective adaptation measures, including both EbA and hard engineering approaches.</p>
<p>UNEP-European Commission ENTRP project</p>	<p>Strengthen the climate change resilience and adaptive capacity of communities and societies in SIDS who are highly dependent on ecosystem services in tropical coastal ecosystems, through activities including the following:</p> <ul style="list-style-type: none"> - Demonstration of integrated planning tools and technical guidance to assist in the development of coastal EbA interventions; - Support relevant authorities and communities in two SIDS in the selection, planning and implementation of practical EbA interventions; and - Support regional capacity-building for EbA development and 	<p>Increased frequency and intensity of drought events.</p> <p>Increased frequency and intensity of floods.</p>	<p>EbA measures are undermined by ongoing negative effects of climate change – including physical damage from floods as well as slow-onset hazards such as drought – which result in degradation of ecosystems and decreasing provision of ecosystem goods and services.</p>	<p>Restoration of degraded watersheds, riparian areas and mangroves using a combination of EbA and hard engineering techniques.</p> <p>Construction and rehabilitation of hard infrastructure such as gabions and levees for flood protection.</p> <p>Research projects and scientific publications on the effects of EbA interventions on the local communities in the intervention sites to provide protocols, cost-effectiveness estimates and increase knowledge base for EbA.</p>	<p>Increased resilience of EbA activities to climate change-related hazards as a result of the introduction of complementary hard engineered adaptation measures such as gabion walls.</p> <p>Increased knowledge and technical capacity at national and local levels to plan and implement locally appropriate and cost-effective adaptation measures, including both EbA and hard engineering approaches.</p>

	implementation including informing supportive adaptation policies, strategies and adaptation plans and upscale the activities.				
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