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

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PART I: PROJECT INFORMATION

Project Title: Improving climate resilience of water sector investments with appropriate climate adaptive activities for pastoral and forestry resources in southern Mauritania			
Country(ies):	Mauritania	GEF Project ID:[1]	5190
GEF Agency(ies):	AfDB	GEF Agency Project ID:	P-MR-EAZ-007
Other Executing Partner(s):	Ministry of Environment and Sustainable Development - MEDD collaborative partner: MHA	Submission Date:	
GEF Focal Area (s):	Climate Change	Project Duration (Months)	36
Name of Parent Program (if applicable): ▪ For SFM/REDD+		Project Agency Fee ($):	635,000

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCA-1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level	Outcome 1.1. : Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas	Output 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks.	LDCF	2,000,000	4,500,000
	Outcome 1.2: Reduced vulnerability to climate change in development sectors	Output 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability	LDCF	1,471,000	4,000,000
	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 variability	LDCF	829,000	2,250,000
CCA-2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level	Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas	Output 2.1.2 Systems in place to disseminate timely risk information	LDCF	400,000	1,000,000
	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	550,000	800,000
	Outcome 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	Output 2.3.1: Targeted population groups participating in adaptation and risk reduction awareness activities	LDCF	600,000	1,000,000
CCA-3: Promote transfer and adoption of adaptation technology	Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas	Output 3.1.1: Relevant adaptation technology transferred to targeted groups	LDCF	200,000	280,000
Total project costs				6,050,000	13,830,000
Project Management Cost				300,000	750,000
Total Project Cost				6,350,000	14,580,000

[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.*

B. PROJECT FRAMEWORK

Project Objective: To improve rural communities' livelihoods and means to combat poverty through managed water investments and adaptative activities for pastoral and forest resources in the southern Wilayas of Mauritania						
Project Component	**Grant Type**	**Expected Outcomes**	**Expected Outputs**	**Trust Fund**	**Grant Amount ($)**	**Confirmed Cofinancing ($)**
Institutional and local capacity building for sustainable climate management of natural resources that is gender responsive	TA	Government managers and community leaders understand adaptation and its impact on different social groups and integrate climate change into NRM policies and strategies Training and awareness on climate change adaptation techniques of conservation and integrated management are promoted in forests and rangelands areas	Mainstreaming gender sensitive adaptation measures and considerations into key national strategies (sustainable development, management of water, pastoral and forestry resources) Promote good resilience practices and participatory management of natural resources addressing appropriate adaptation measures to local communities (inclusively) in rangelands and protected forests Training natural resource managers from public institutions and local communities (men and women) on water operating systems suitable to resilient livestock herding methods in pastoral and forest areas Training the target groups (men and women) on appropriate adaptation techniques and best management practices of conservation of pastoral and forest resources	LDCF	1,000,000	2,350,000
Reducing vulnerability to climate change of rural water infrastructures and activities	Inv.	Increase agriculture and pastoral productivity via diversified water harvesting devices Enhance water management and reliability by improving resilience of existing infrastructures and rural activities	Reinforce the mechanisms of monitoring and restoring water sources and ecological services of wetlands of significance Ensure mobilization of additional water resources Reinforce sustainably protection of rural water infrastructures and their productive activities Perform close control and continuous supervision of resilience activities in the five southern Wilayas	LDCF	2,000,000	6,250,000
Diversify and strenghten livelihoods and source of incomes of the rural and agro-pastoral population	Inv.	Livelihoods and income generation activities of rural and agropastoral population are diversified and strengthened	Promote diversified income generation activities in small-scale irrigated agricultural production and agro-forestry systems reinforcing rural and agro-pastoral resilience Introduce solar cooker, improved stoves and reforestation activities reducing firewood use while diversifying income generating revenu in the vicinity of forest and pastoral sites	LDCF	2,500,000	4,500,000

		Sylvo-pastoral resources and infrastructures in target areas are restored and sustainably protected	Introduce dune fixation techniques to secure vulnerable infrastructures and livelihoods Elaborate and implement restoration plans in 5 pilote wetlands and relevant forestry and pastoral resources reserves			
Knowledge management, Communication, and M & E	TA	Increased knowledge and communication best approaches and practices in NRM are evaluated and disseminated	Produce and disseminate locally gender informed lessons learnt and associated knowledge products on NRM Identify gender appropriate communication means and channels including political dialogue to facilitate workability of the project innovant introduced tools	LDCF	550,000	730,000
		More efficient tools of monitoring and evaluation and reporting are tailored for the project supervision	Preparation and dissemination in target forest areas and rangelands of a M&E gender sensitive manual addressing resilience of natural resources Build a database on climate change that reinforces existing government web-based platform to allow sharing relevant information amongst government structures and partners			
		Suitable Project coordination and management mechanisms identified	Supervise and coordinate Project management			
			Subtotal		6,050,000	13,830,000
			Project management Cost (PMC)[3]	LDCF	300,000	750,000
			Total project costs		6,350,000	14,580,000

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming co-financing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
Government of Mauritania	MEDD	In kind	1,580,000
GEF Agency	AfDB	Grant	13,000,000
Total Co-financing			14,580,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[4]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	(in $)		
				Grant Amount (a)	Agency Fee (b)[5]	Total c=a+b

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

[4] *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*

[5] *Indicate fees related to this project.*

AfDB	LDCF	Climate Change	Mauritania	6,350,000	635,000	6,985,000
(select)	(select)	(select)				
Total Grant Resources				6,350,000	635,000	6,985,000

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount ($)	Cofinancing ($)	Project Total ($)
National/Local Consultants	Political dialogue		66,667
National/Local Consultants	Elaboration of referential situation		66,667
National/Local Consultants	Elaboration of a M&E manual		11,667

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? (Select)

(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 PIF[6]

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.

A.1.1 the GEF focal area/LDCF/SCCF strategies:

The project is focused on reducing vulnerability to the adverse impacts of climate change (CCA-1) in three ways: (i) Outcome 1.1 by mainstreaming adaptation in broader development frameworks (pastoralism and forestry) at country level and in the targeted southern vulnerable areas (municipalities) of Mauritania with the expectation of achieving adaptation measures and necessary budget allocations to be included in PDCs (communal development plans) for these relevant frameworks; (ii) Outcome 1.2 by reducing vulnerability in pastoralism and forestry development sectors aiming to increase the number of additional people provided with access to safe water supply and basic sanitation services under the conditions of changing climate and to strengthen vulnerable physical, natural and social assets in response to climate change impacts, including variability by introducing drinking water management practices that increase access to clean drinking water; and (iii) Outcome 1.3 by diversifying and strengthening livelihoods and sources of income for vulnerable people in the southern areas of Mauritania aiming strengthen targeted individual and community livelihood strategies in relation to climate change impacts, including variability. The project is also focused on increasing adaptive capacity to respond to the impacts of climate change (CCA-2) through (i) increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas, (ii) strengthened adaptive capacity to reduce risks to climate-induced economic losses and (iii) strengthened awareness and ownership of adaptation and climate risk reduction processes at local level. This implies the introduction of community managed investment and activities such as water harvesting, natural regeneration of forest areas, land and water management by reducing risks to climate-induced pastoral and forest resources losses and raising awareness and ownership of adaptation and climate risks reduction processes, etc. Thus, the project will contribute to promote transfer and adoption of adaptation technology (CCA-3) through the promotion of successful demonstration, deployment, and transfer of relevant adaptation technology in target areas. The project is designed and tests an integrated approach to climate proof baseline infrastructure and other technology tools adapted to arid zones while increasing resilience of additional actors.

A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities:

The LDCF/SCCF eligibility criteria and priorities: Mauritania is an LDCF; it has submitted its NAPA in 2004 and is eligible to LDCF resources. The project responds to the highest priorities of the NAPA and request the additional cost for adaptation to climate change from a development water infrastructures and

[6] *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.*

activities project. Most of the additional cost of water investments will be utilized for pastoral and forestry resources (see annex E). Soil and Water conservation *inter-alia* techniques to be introduced are considered innovative and will reduce vulnerability to climate change in arid and semi-arid climates (see also annex H for complementary innovative tools).

A.2. National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

As regard to the project's alignment from the approved PIF there is a consistency of the wording of Table A with the LDCF/SCCF results-based management framework and Adaptation Monitoring and Assessment Tool (AMAT) in CCA-1, particularly in the outputs side. Table A of PIF does not include Outcome 2.1 and Outcome 2.2; yet, in order to address increase adaptive capacity to respond to the impacts of climate change objective, the project relies very much on increased knowledge and understanding of climate variability and change-induced risks of the actors in one hand; and, strengthened adaptive capacity to reduce risks to climate-induced economic losses of livelihoods sources and the stakeholders, on the other hand. PIF Table A does not include CCA-3 Outcome 3.1 while this represents for the REVUWI the key ecosystem based adaptation approach that addresses simultaneously policy dialogue as a tool of introducing good practices in resources shared management, the ecosystem payment services between settled farmers and nomad herders, the biosphere management strategy which cross-cuts and takes into consideration multiple objectives and visions of natural resources management and protection within conflicting needs for their services; etc.

As regards to national strategies and plans or key Convention reports and Assessments, the project is closely aligned with the Mauritania NAPA (2004), the SNC (2008) and TNC (2014) since grassland and forest conservation as well as water resource management are listed as priorities in all these national policy instruments. This project complements other projects in-situ implemented by AfDB, SCCF, IFAD, EU, GIZ and UNDP (or WB project on pastoralism in perspective) as outlined in Annex E B6 and is additional to the PNISER AfDB baseline project. The project has direct links with national priorities set by PRSP III and PANE II. The project responds to those objectives and priorities by developing human resources and expansion of basic services while reducing disparities. The project is also aligned to other national planning instruments highlighted in the PIF (PRSP 2011-2015), NSDS and PANE II. However, the current PANE II is not confined to sectoral approach alone but does emphasize the importance of an ecosystem approach to climate change adaptation. There is a need to increase the emphasis on, and facilitate the mainstreaming and adoption of, an ecosystem approach to climate change adaptation in national policies as this has never been tested on the ground in Mauritania where this approach is more adapted to the country size and geomorphology. This LDCF project will contribute to introducing and strengthening local, national and regional capacities for using wisely both the ecosystem based adaptation approach and the sectoral based approach wherever it is appropriate. Implementation of these project activities will be strengthened by aligning them with relevant policies and priorities. National and regional support for a holistic based approach to climate change adaptation will be increased by developing cooperation and synergies between this LDCF initiative and current ongoing SCCF projects and relevant national and regional networks.

A.3 The GEF Agency’s comparative advantage

The AfDB has a long history supporting Mauritania's initiatives in agriculture, water supply, water resource management and social sectors as well as roads and power projects. This project is consistent with the current AfDB West Africa Development Strategy on the basis of which the Bank has implemented several successful projects in Mauritania that are providing a solid base for sustainable rural development through income diversification and natural resources management. This should result in long term benefits in strengthening climate change adaptation capability of vulnerable communities. Lessons learned from the Bank previous projects in Mauritania and in the Senegal River watershed will be used to design an efficient IEM mechanism applied to forest management. The techniques implemented will reduce community vulnerability to climate change by increasing the supply of water, forest products (fruits, medicinal plants), and income generating activities.

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

Country profile: Three quarters of Mauritania's territory of about 1 million square kilometers is desert, and only about 10 percent is arable. It is one of the Sahelian countries that have been hardest hit by successive droughts over the past 30 years. Mauritania's Programme d'Action National d'Adaptation (PANA, National Adaptation Programme of Action, 2004) identifies water, pastoralism and agriculture as the most vulnerable sectors to climate change, and highlights that food insecurity could be exacerbated under a scenario of higher temperatures and more erratic rainfall due to lower quality and quantity of livestock and agricultural output. With a Human Development Index (HDI) of only 0.433, Mauritania ranks 136th of 169 countries. The poverty rate in rural areas is close to 60 percent, with 30 percent of the population living in extreme poverty. According to the demographic and sectoral census (MASEF, 2009) 29% of Mauritanian households are headed by women and 24% of the Mauritanian population lives in a household headed by a woman whose 25.4% urban and 31.7% rural. Women's participation in household income accounted for 81% in rural areas and 68% in urban areas (source: Sector Study gender, poverty, economic and social integration). In terms of poverty in rural areas, the analysis of the incidence of poverty by gender of household head shows that it is higher (57.9% against 52,9) among households headed by women (source rural women action plan 2009-2012). Indeed, because of the emigration of men, the number of households led by women increased and their vulnerability worsened in size from 1996 (40.5%) to 2004 (44%) and in terms of poverty. The country has always been highly food deficient, producing only about 30 percent of requirements. Twenty five percent of the rural population is food-insecure, and they are concentrated in the agro-pastoral zones in the south-east, which is the focus of the proposed project. Half of rural households lack access to safe drinking water. Forty percent of the population (estimated at about 3.3 million in 2011 and having doubled over the last 25 years) is younger than 14 years old. The overall weak population density varies widely between regions, with the largest concentrations found in the capital of Nouakchott, the port of Nouadhibou, and along the river Senegal in the south. The share of the urban population has increased from 3 percent in 1960 to 41 percent in 2010.This rapid urbanization is spurred by an exodus from rural areas, where a combination of human and climate-induced factors is leading to the degradation of the productive base for almost a third of the country's population. Nevertheless, because of population growth, the absolute number of people leading nomadic lives has also increased in the last 25 years among which at least 30% are women. There is also a higher percentage of women among these groups than in urban areas due to the migration of men in search of employment in the cities.

Climate in the baseline project area: Mauritania's climate is dry, hot and windy, and thus severely exposed to the effects of desertification. Most of Mauritania receives very little rainfall at any time of year. The southern edge, which reaches the Sahel, has a wet season (up to 200mm of rain fall per month) which is controlled by the movement of the Inter- Tropical Convergence Zone (ITCZ) which oscillates between the northern and southern tropics over the course of a year (see also annex G for more detailed associated climate story).

The baseline project is an Integrated rural water supply project (Programme national integre dans le secteur de l'eau en milieu rural - PNISER) which uses an integrated approach to respond to the domestic and agriculture water needs of the rural population of the wilayas of Gorgol, Brakna and Tagant. These wilayas represents 34 % of the rural population, equivalent to 736,000[7]. The choice of these regions is justified by the high rate of poverty (63.9% in Brakna, 66.5% in Gorgol and 67.8% in Tagant) in these regions that have "significant" water resources and are a crossroads of livestock transhumance from the west and north of the country in search of pastures and water points.

Purpose and expected outcomes of the project: The project aim is to contribute to: (i) improving the living conditions of rural populations in Brakna, Gorgol and Tagant through the water service for different uses (drinking water, small irrigation, rural water and sanitation) and (ii) the development of an integrated national strategy for the mobilization and management of water resources. Its expected effects are four in number : (i) Effect 1 : Improved access of populations to WSS; (ii) Outcome 2 : Increased availability of water for livestock in pastoral areas of the three regions ; (iii) Effect 3 : Increasing vegetable production

[7] *The population of these Wilayat is estimated at 2,302,916, i.e. 66.5% of the total population (RGPH, 2013).*

in the three regions ; (iv) Effect 4 : Development of national mobilization strategy and integrated management of water resources for the various sub-sectors including the Evaluation of Environmental, Gender and Social Strategic Climate impact of this strategy.

The components of the project PNISER: The project has two main components:

a. Infrastructure development. The development component of pastoral sanitation and small-scale irrigation infrastructure drinking water, covers the following activities : (i) drinking water infrastructure (construction of 22 boreholes and 22 new solar systems AEP ; rehabilitation / extension of 10 existing systems) ; (ii) the drainage (construction of 120 institutional latrines in public places disaggragate by gender & disablity (latrines to be developped and spread as needed between men, women and people with specific needs); (iii) Implementation of gender sensitive CLTS in 140 villages ; (iv) Pastoral Hydraulics (making 8 holes pastoral solar and 2 modern wells) ; (v) Mobilization of Surface Water (construction of three retention basins) ; (vi) irrigation facilities (completion of 20 solar pumping boreholes to supply 20 market gardens of 2 hectares each);

b. Institutional support. The institutional support component includes: (i) development of a national mobilization strategy and integrated management of water resources in the long run ; (ii) the preparation of the development plan for the National Office of the water Sector in Rural areas (ONSER) ; (iii) rehabilitation of Tagant's Regional Directorate of Water Resources (DHR) office buildings; (iv) capacity building of the direction of hydraulic (DH) and regional services (training in procurement procedures, disbursement and financial management) ; and (v) strengthening the capacity of local actors : training in agricultural techniques and itinerary and management structures.

The main expected outputs of the baseline project are: (i) 140 villages under “end of open free defecation (ODF), (ii) 120 new institutional latrines built at the village public infrastructures (markets, schools, health centers and other public places - disaggratate by gender & disablity) (iii) 51 new wells for drinking water, pastoral water and small irrigation, (iv) 23 new solar systems AEP built to serve about 110,000 people and 08 stock watering systems, (v) 51 solar pumping systems supplied and installed (vi) 40 ha developed as small-scale irrigation of 2 hectares each in favor of women's groups and youth (vii) 02 pastoral wells and 03 retention ponds for watering a workforce of 250 000 additional cattle (viii) 23 associations of water users in place, lively and trained management and maintenance of water points, and (ix) 20 women's associations formed and trained in farming techniques and management of small-scale irrigation. The cost of the sub-program is estimated at UA 14.56 million and will be implemented over five years from beginning 2013. The main beneficiaries are the livestock farmers and rural groups including women who are very active in gardening and youth, artisans, SMEs and technical services in charge of water and rural development. More than 250 000 cattle will benefit from improved water availability. Approximately 80 ha of small developed areas benefit women and youth and allow them to generate additional income. The baseline project will increase resilience of climate change to the above mentioned targeted population but this resilience can be jeopardized if the project does not consider climate change in an integrated manner, addressing the effects of climate change on the population that has an influence in the baseline project, i.e the agro-pastoralists and nomads. An integrated approach of the impact of climate change implies the analysis of linkages, by identifying the population potentially affected by climate change that can have an impact in the baseline project. Cooking with solar energy as to reduce reliance on the use of timber products (coal and wood). Pressure on forest exploitation for the purpose of domestic energy use will be reduced which will have a positive impact on forest regeneration and vegetation cover.

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:

The problem - Climate Change effects: For more detail on the current and projected climate profile and their impacts (see Annex G). In summary, it has been described in the annex how a downward trend in precipitation is expected to be detrimental to agro-pastoral livelihood zones in marginal environments with just enough rainfall. Also of concern is the possibility that precipitation would occur less frequently but more intensely in these zones, leading to overall drier years with more flood events. In the 1980s, 70 percent of Mauritanians were nomads and subsistence farmers amongst which 30% are women. In the past thirty years, recurrent droughts have forced many of these people to move to the cities. This next

decade will be a period of severe drought in Mauritania resulting in a significant migration to urban centres, especially from men; the women's share of that migration will be around 1/3. Almost half of Mauritania's population, and 75 percent of the country's poor, still depend on agriculture and livestock. And these activities generate about a third of the country's GNP. For these reasons the Government has made its priority on resilience of rural livelihoods. Mauritania's National Adaptation Plan of Actions (2004) identified desertification and its impact on land and water resources - and their impact, in turn, on livelihoods and food security - as a key issue, highlighting that water, pastoralism and agriculture are the most vulnerable sectors in the country. Agricultural and herding practices have always been tenuous in the country's hot, dry climate. Rain-fed and "derrière barrage" cultivation are the main cropping systems and have long been exposed to rainfall variability. In the remote past, pastoralists and farmers have developed adaptation strategies to cope with variations in the weather. These principally focused on moving to areas which were less hot and dry and not overpopulated, and developing and protecting water resources. In recent years, agricultural diversification and temporary emigration and employment have been added as coping strategies. None of these strategies are as robust as they used to be as a result of climate change. Climate change has further exposed unprotected soil, raised temperatures and dried out wells, and compromised land management practices that were at least marginally sustainable. Since 1968, the plant growth period has decreased by 20 to 30 days ((PAN-LCD, 2013)). It is estimated that since 1970 some 150,000 km2 of Mauritania has turned to desert (PAN-LCD, 2013), with populations constantly retreating from areas becoming uninhabitable. As a result, there has been a reduction of livestock and a sedentarization of herds around large agglomerations. Animal diseases are on the rise and animal deaths are more common. Degradation continues to be exacerbated by recurrent droughts, thus contributing to the expansion of the desert and reduction of cultivable area. As a result, more people are farming and herding on smaller pieces of land, there is increased competition between cropping and livestock, and farmers are increasingly using marginal soils that are sensitive to erosion. Wide scale sedentarization is reflected in the proliferation of villages along the transhumance axes, paved roads and in the vicinity of wetlands. And within villages there is a widening disparity of wealth favouring those with the means to acquire land and livestock and further impoverishing crop and livestock farmers who sell to them during shocks. In short, traditional pastoralists are abandoning their nomadic lifestyle, selling their livestock and becoming destitute. The average agricultural income is below threshold. Due to their nature, the systems associated with agriculture are vulnerable to the availability of pasture land. Although nomads have traditional access to these resources, there is competition and tension with other users. As a result, incomes are meagre, forcing people to sell their animals at prices which don't allow them to purchase productive capital or fodders to feed remaining animals. Some cope by finding additional sources of income, often by cutting trees for charcoal production. When all this fails, then they migrate to the cities. The overall effect on rural incomes and rural food security can be devastating. According to FAO, domestic food production has declined over the past forty years. The production index has fallen from 161 in 1969-71 to 97 in 2005-2007. This reduced agricultural output leads to reduced income for rural populations, thereby exacerbating poverty and decreasing their purchasing power to buy food. Poor rural households allocate up to 80 percent of their income to food; many have had to cut back on other expenses such as health and education, sell their assets and reduce their consumption of meat and dairy products. Acute malnutrition in children aged 6–59 months is 12.5 percent nationwide – well above the World Health Organization threshold - with peaks above 18 percent. Choric malnutrition affects as much as a third of the population in the centre of the country, and in the south east which is the target of the proposed project. Government Commitment to Overcoming Barriers to Adaptation Largely because of its precarious climate, Mauritania is one of the largest recipients of donor assistance in Sub-Saharan Africa. Agricultural and rural development initiatives have made up the bulk of support with the aim of stimulating the rural economy, improving agricultural productivity, promoting sustainable land management and improving food security. However, these and other interventions which fail to explicitly build the resilience of local populations to climate change and to overcome the barriers to adaptation may not be sustainable. The project is being proposed by the Ministry of Environment and Sustainable Development (MEDD) as a key element in the national adaptation strategy (PANA, 2004). The project will build on the efforts of a number of earlier interventions which focused on natural resource management (see Annex F), to more explicitly address climate change impacts on resource degradation and food security and the capacity of communities to

plan for and mitigate climate shocks. The project also represents the Government's desire to make more concrete other core strategies, including the new Poverty Reduction Strategic Framework (2011-15), the National Action Plan for the Environment (PANE), and the National Strategy for Sustainable Development (SNDD). These programs mark an important shift in the Government's approach in that they explicitly recognize the important role the agro-pastoralist plays as steward of the environment and commit to building their awareness and capacity to take action, going beyond natural resource management to tackle the need for longer-term sustainability in the face of climate change. Critically, the Government recognizes the need through the project, to break down existing barriers to adaptation, including: (1) lack of information at all levels on understanding and managing climate risks, (2) weak local and national capacities to develop climate change strategies and adaptation measures and ensure their dissemination and replication, 3) poverty and the lack of resources to invest in soil and water preserving assets at the community and household levels, 4) lack of alternatives to short-term, unsustainable coping strategies, and, 5) institutional fragmentation which results in the lack of a coherent strategy and projects that are complementary. The Government understands that desertification and the southward expansion of the desert are not exclusively caused by climate change. Rather, it is the result of a number of interrelated factors, many of them are human, in particular overgrazing and deforestation. Graph 1 (appendix 1) illustrates the mutually connection of climate and human factors the project intends to address. This picture does not represent a scientific model, but serves to illustrate the interrelationship between the most important natural and human factors contributing to observed deterioration. Additional factors include changes in temperature (which are still difficult to predict, including their effect on plant growth, evaporation, etc.) and wind patterns which can have significant impacts on soil erosion and the advance of the desert. The area surrounding Senegal River was, in its western part, significantly covered by forest, but no more than 60% of this forest remains. Deforestation and land degradation has resulted from several factors, including expansion of agriculture, cutting of trees for fuel-wood and over-grazing. This impact is exacerbated in the recent years, due to the climate change variability and its impact on the needs of pastoral and nomads to feed their cattle and for their cook activities. Because of their subsistence practices this population is the more affected by climate change but they adapt by transgressing in other areas and going beyond their current practices. By disrupting in those areas, very often land degradation and water conflicts occurs, increasing the vulnerability of those visited and "disrupted areas".

The additionality:

The GEF project will be implemented in the PNISER areas but also in the five adjacent districts where the PNISER-IWRM approach can be extended and enhanced. This extension of PNISER project area seeks to mitigate those linked effects of climate change, on the nomads and in the "disrupted" area, by extending the scope of activities of the baseline project to the surrounding Wilayas. This approach will mitigate "up front" the problem and its impact. This will induce an additional investment: (i) on the nomad areas of influence in order to reduce the risk of climate change impact on the baseline project; those investments could be considered as "win-win climate change buffer investments" in the sense of supporting activities and infrastructures that will protect the baseline investments; (ii) on reducing the vulnerability to climate change of the baseline basic infrastructures by promoting additional infrastructure (irrigation techniques) and more climate change adaptation practices; (iii) but will also support and make more resilient the other population (in this case the nomads) and pastoral and forest resources of the PNISER surrounding southern Wilayas. This description of the additionality is simulated in graph 1 (in Appendix 1) in page 25.

The project:

1. **Project goal and objective**:

   The overall goal of the project is "to reduce the vulnerability of the country to climate change impacts through various best practices and diversified approaches facilitating application of both sectoral and ecosystem approaches to climate change adaptation across regions, ecosystems and sectors". The objective of the project is: "to build climate resilience in vulnerable pastoral and forest areas by providing support for planning, financing and implementing both as appropriate (an ecosystem and sectoral approach) to climate change adaptation through effective knowledge and technology transfer mechanisms including capacity building, knowledge support and concrete, on-the-ground

demonstration in arid/semi-arid ecosystems". The project expects to achieve this objective and goal by pursuing the following expected outcomes:

- Outcome 1.1. : Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas
- Outcome 1.2: Reduced vulnerability to climate change in development sectors (Components 1 and 4).
- Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas (Component 2 and 3);
- Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas
- Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses
- Outcome 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level (Components 1);
- Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas (Components 2 and 3).

2. Project components and expected results:

In the proposed project those "win-win climate change buffer investments" are structured in 4 components, as follows (for more details see Annex E):

- *Institutional and local capacity building for sustainable management of natural resources:* The "institutional support" component of the baseline project plans to support the development of master plans, strategy and support of regional officers as well as cooperatives and communities. In addition to that the trainings will expand in terms of contents – from water management and water infrastructures - to users as to ensure that climate change is considered in an integrated manner;
- *Reducing vulnerability to climate change of rural water infrastructures and associated activities:* As mentioned above, in order to reduce the vulnerability to climate change of the rural water infrastructures and associated activities the project propose additional efforts in baseline project areas and surrounding areas. Those efforts should be focus on reducing the impact of climate change by promoting land and water management techniques, technologies in the baseline infrastructures and the development of infrastructures in the surrounding areas. Some of the potential activities are vegetation, reforestation, dissemination of cook-stoves, and improved charcoal, improved irrigation technologies and techniques (drip, etc.) and innovative water retention and capture structures that can be developed at the community level. The promotion and implementation of those activities will reduce vulnerability of the rural water infrastructure by allowing people to be in a better position of managing uncertainty and reducing the disruption and degradation of pastoralists. Four activities articulate this sub-component: (i) Mechanisms for monitoring and restoration of water resources and ecological services of major wetlands are strengthened: the procurement and installation of 85 reference precipitation gauges and 165 limnimetric scales; (ii) The mobilization of additional water resources is ensured through construction of 20 pastoral wells, 2 borehole-based (equipped with solar pumps) drinking water supply systems, 2 drinking water supply systems from water intakes along the Senegal River, 6 water harvesting ponds for pastoral needs; (iii) Rural water infrastructure and activities are sustainably protected through the promotion of good practices deemed resilient and favourable for the replenishment of underground water tables around hydraulic structures, including WSC/SPR[8], a revitalization of the vegetation cover, construction of 600 ml of filtering dykes in the relevant watersheds sites, 200 ml of gabions, 20 ha of bunds, 500 ml of filtering dykes in the lowlands, the promotion of greening over mechanisms for the protection of rural water infrastructure developed by the project on a surface area of 46 ha; (iv) Supervision and close control of resilience activities in five Wilayas, including water supply works (drilling, DWS

[8] *Water and Soil Conservation/Soil Protection and Restoration*

systems[9]) and the development of water harvesting ponds are ensured. All these activities appear obviously to address nomads' resilience package.

- *Diversify and strengthening livelihoods and source of incomes of the rural and agro-pastoral population*: The baseline project plans already the diversification of activities, but it does not consider alternatives such as agro-forestry, agriculture, etc. of the adjoining communities: (i) Natural resource protection works are diversified through stabilization of mobile dunes in sensitive sites over 575 acres, deferred grazing and plantations over 640 ha (pastoral reserves and restoration of classified forests), promotion of a biosphere reserve of the El Athef under exposure area; (ii) Economic resilience activities for vulnerable nomads and farmers living in forest sites and endangered grazing lands are reinforced through: (i) the exploitation of wetlands; (ii) the development of PES shared mechanism as win-win approach for herders and local villagers; (iii) regeneration of gum trees; (iv) the introduction of improved stoves and solar cookers as to alleviate women's work; (v) the promotion of female agro-forestry; and (vi) the promotion of vegetable gardening using improved irrigation namely drip technology.
- *Knowledge and best practices of resilience are monitored, evaluated and disseminated:* This fourth component deals simultaneously with knowledge sharing and capitalization, communication and M&E compliance. These activities need to take into account the gender dimension to the level of no less than 30% of participation. It concerns defining and adhering to knowledge sharing practices and dissemination following a M&E process : (i) Knowledge sharing and dissemination, as well as communication are ensured at local level through promotion of proven local empirical knowledge, introduction of innovative approaches to NRM[10] (EbA[11], Climate-proofing, PES[12]); capitalization and dissemination of resilient good practices and lessons including gender-specific measures (development of technical standards, organization of exchange visits), communication (communication channels and mechanisms, policy dialogue for Natural Resource Management in dry areas as PES tool); (ii) Project monitoring and evaluation are executed in a timely manner: (i) Preparation of a natural resources monitoring and evaluation manual; (ii) Project monitoring and evaluation, including the baseline situation and the creation of a database.

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:

Various types of risks threatening the project were identified and respective mitigation measures proposed in the PIF. Additional risks has been observed during the PPG formulation as shown in the following Table 1 : Summary of risks and mitigation measures.

Table 1 : Summary of risks and mitigation measures.

Risks	Rate of risk	Mitigation measures
Non matching projects areas of PNISER (3 regions) and REVUWI (8 regions). The project area set by PIF may underline some financial and institutional constraints related to the delivery system	H	• Both AfDB and the Government are conscious of the delay that may arise at REVUWI commencement as opposed to a-year long implementation of PNISER in terms of matching the two projects planning as well as the legal limitation put on PNISER to support REVUWI activities beyond its original three regions. Since the extension of REVUWI to the 8 southern Wilayas is at the request of the Government there is an assurance from its representative that the budgetary deficit will be provided by the national budget in order to put the remaining 5 DREDD in the same conditions as those of PNISER.
Limited collaboration between MEDD and MHA	M	• Secure representation of key representative of both ministries in the Project Steering Committee

[9] *Drinking Water Supply*
[10] *Natural Resource Management*
[11] *Ecosystem-based Adaptation*
[12] *Payment for Environment Service*

		• AfDB supervision visits will provide the necessary backup and support to ensure good collaboration • Provide MEDD and MHA with secured consultative access to information in the Project M&E system
Participatory development approaches that underpin this project initiative are strongly dependent on the quality of personnel deployed on the ground, appropriate motivation and the participation of all stakeholders in the process.	M	• Coordination requires a certain authority that only the Ministry of Environment can fill13. The framework law on Planning has just been passed by the Parliament, just in time to provide MEDD with this authority. This law covers all aspects of national land management: (i) it clarifies the principles and strategic choices, (ii) formulates guidelines on major national policy in the project area, and (iii) defines tools and structures needed for implementation.
Livestock herders, farmers, butchers and charcoal producers continue to exploit free use pastoral resources and protected forest areas or restricted resources for short term gain and to settle inside the area despite the limitation put on them; they even oppose resistance to move their homes out of restricted areas.	M	• A large outreach effort needs to be directed to all users ; • Implementation of the project activities, governed respectively by the Pastoral and Forest Codes and bylaws, will be reinforced; • The communities will be involved in the resources management plans and in particular provisions could be made so that no users with immovable residence in restricted areas will need to move if all agree to practice sustainable forest management; • Training of all users and their committees on forest and pastoral bylaws will be reinforced.
Frequent climate shocks in the Sahel (droughts and floods, locust plagues, epidemics) may lead to a very high pressure on pastoral resources (over-grazing) and on forest (over-harvesting) as the last refuge of the farmers during lean periods.	M	• Providing income generating activities and other opportunities like adaptation measures to over-grazing and over-harvesting • Set-up and train water management committees • Protection of water catchment facilities against erosion and siltation • Tree planting at the project sites and the farmers' concessions • Promote resources conservative techniques • Support educational measures on environmental conservation
The animal continued pressure (overgrazing) and invasion of locusts are two determinants of grassland and forest vitality and regeneration.	M	• This issue will be mitigated by the support which will be provided by the REVUWI project to the existing local consultative bodies and the synergies with the work of the AfDB project, namely Multinational CILSS - *Strengthening resilience to recurrent food and nutrition insecurity in the Sahel-P2RS*, in its component 1 (infrastructure development).
Tensions and conflicts between transhumant / nomadic communities, livestock herders and sedentary agriculturalists	M	• Two mitigating actions: (i) Participation in strengthening local collaboration frameworks and to policy dialogue sessions promoted by the project as in PES or biosphere zone cases; (ii) Full involvement of communities to water infrastructures and activities co-management
Forest co-management with communities, promoted by the forest current Code, is criticized by some villagers due to forest officers' zeal purposely administered, or underlined risk that land can be sold or declassified by the administrative authorities to benefit uprising irrigated agricultural activities or the pressuring private sector	M	• The pioneer experience of forest co-management developed in the Municipality of Tekane where the Gani forest cooperative (cofoga) has been created and entitled by MEDD to develop and implement a management plan with a technical support from the DREDD will be strengthened and replicated as a model for development where long term benefits can be expected.
A sixth risk has been observed during the PIF but emphasized during PPG formulation related to the absorptive	M	• This risk will be mitigated by building the capacity of the DREDD staff and recruiting individual consultants (rural engineering, local NGOs and consultants with sufficient

[13] *This happened while the Ministry was appended to the Prime Minister and called MDEDD; on 17 September 2013 this ministry became is no longer delegated to the Prime Minister's Office and called MEDD.*

capacity of the DREDD to execute the project activities based on the number of ongoing projects at various levels of implementation or in perspective in the project area.		qualification and experience in water conservation, grassland and forest management, sustainable livelihood activities, monitoring and evaluation, policy dialogue, procurement and administrative and financial management) to support the project implementation. The preparation of an administrative and financial procedures manual, the organization of a launching mission and close supervision missions are also measures that could mitigate the risk inherent to the weak capacities of the DREDD. The AfDB as implementing agency will provide also the necessary backup and support to ensure that project activities are implemented in a timely manner. The Financial and Technical Partners Group for environment (GTEDD)14 where AFDB seats alongside other donor agencies in Mauritania, and its sub-group for climate change (GTEDD/CC), are both conscious of the need to provide a diligent oversight over the implementation of all adaptation initiatives to ensure adequate synergy and avoid duplication
Weak involvement of actors and low dissemination of knowledge	M	• The project plans to organize several awareness-raising campaigns at the national, regional and local levels, which should stimulate the involvement of the different actors. • The project will adopt a participatory approach based on demand during the cycle and the implementation process. • Lessons learned will also be disseminated through workshops.
Predominance of illiteracy and weak mobilization in the rural areas	M	• The REVUWI project plans to conduct literacy activities. • Awareness will be raised among management committees and farmers involved in the various interventions, who will undergo the necessary technical training to ensure that they adopt adaptation activities.
Persistence of extreme poverty and non-access to technological packages beyond the project duration	L	• Combatting poverty is one of the main priorities of the government • The proposed technological packages are based on improved packages that communities and livestock herders know already
Overall rate of risk	**M**	

Rate of risk: *(Where H stands for High ; M for Medium ; and L for Low)*

A.7. Coordination with other relevant GEF financed initiatives

A range of GEF and non-GEF national projects focused on ecosystem management or using an ecosystem approach to climate change adaptation have been implemented or are currently being implemented in the project area (see Table 4 of Annex E). REVUWI will focus on collating, synthesising and disseminating the lessons learned from these projects using a standardised approach. A template will be developed to do this and the collated information will be made available through an online inter-wilaya network via CCPNCC website. Detailed guidelines and training will be provided to assist DREDD with collating and presenting the detailed technical information that is required. Detailed protocols on implementing an ecosystem approach to climate change adaptation within a wide range of ecosystems and sectors will be developed using knowledge from on-the-ground interventions and the scientific and grey literature. Without REVUWI support, the information, results and lessons learned from these projects is unlikely to be transferred in a systematic and consistent format for building climate resilience in the southern regions of Mauritania. REVUWI will be closely coordinated with and linked to the environment and later to CCPNCC climate change adaptation websites for assisting the Wilayas to address the effects of climate change. REVUWI will make use of the lessons learned and develop synergies with GEF and non-GEF projects being implemented within the project area. These include: (i) sustainable management of upland, wetlands and floodplains for maintaining water flow and quality; (ii) conservation and restoration of forests to stabilise soil and regulate water flows; (iii) establishment of diverse multi-use forests to cope with an increased risk from changed climatic

[14] *This group is currently led by GIZ, while GTEDD/CC is led currently led by UNDP*

conditions; (iv) conservation of eco-agriculture systems to provide specific gene pools for crop and livestock adaptation to climate change; (v) wind-breaks to increase resilience of rangelands; and (vi) stabilize and fix sand dune from mobility to protect water infrastructures and activities. The project will co-ordinate with all the sector initiatives implemented by the AfDB and other agencies such as GEF, IFAD, EU, SCCF, GIZ and AFD based on the linkages set in Table 4 of Annex E and the GTEDD and GTEDD/CC coordinating mechanisms. The benefits of using an EbA, a multisectoral approach, will be documented and used. (ii) The second phase of the AWF IWRM project and the Rural Water Supply and Sanitation Project will consitute a baseline of 14.5 million $US upon which this GEF LDCF funding will build adding incremental value in terms of integrated forest and water management by communities in collaboration with local and international NGOs and government agencies. At the outset of Component 1 of REVUWI, the regional CREDD[15] will be established to develop collaborations between REVUWI and the existing regional networks and institutions mentionned in Annex E (see Table 4). For the national level this coordination will operate as described in the preceding section A.6. These working committees will coordinate their efforts as to avoid duplication and promote synergy.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

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

Key stakeholders include local government institutions, the local communities, communities organizations (AGLC, ADC, AGPO, cooperatives, etc.), NGOs and government ministries responsible for environmental protection, forest and water conservation, and agriculture development. Six Ministries (MEDD, MHA, MDR, MASEF, MAED and MIDEC) has been contacted and will be involved with activities co-ordinated by the Ministry of Environment and Development. At least 50 communities or cluster villages (for a maximum of three villages per activity) will be organized into committees as to cover the following initiatives: 5 pilot wetlands, 10 forest reserves and 35 grazing areas. The project will focus on five regions for the sustainable livelihoods components and two regions for the sanitation activities.

Stakeholder involvement at project design: The formulation of the project has been executed with the involvement of all stakeholders from down to top levels through meetings, consultations and workshops. Field visits have been organized in all eight Wilayas of the project and in some specific hot spots project sites. Consultations have also been organized at local, regional and national levels respectively with the populations including women and women's groups, the regional officers, and line ministries at the central level whose all views have been incorporated. The beneficiaries are willing to provide labor force as for in-king co-financing those activities that are intended to their respective communities, where and when deemed necessary. Whereas climate impacts and stresses were determined with local herders and agriculturalists at the fields sites based on an ecosystem approach and associated adaptation options, assessments of sectoral vulnerability have been conducted with the DREDD and DRHA along with the participation of other regional services (MDR, MAED, etc.) and the civil society at the Wali's cabinet. Therefore, this proposal has been elaborated through a participatory process, where all parties, with higher representation of women, have been duly involved and informed. The results of this investigation have been exposed and validated: (i) first to the key ministries individually; (ii) then in an Aide-Memoire format to AfDB for validation; and (iii) finally to a designated Government committee in charge of its endorsement. The methodology received full support of the two key Ministries (MEDD and MHA), the UNFCCC and GEF Focal Points and the beneficiaries. The Aide-Memoire provides a description of the project design assorted with a logframe and a budget, with the list of persons met and visited sites.

Stakeholders engagement in project implementation

A Project Steering Committee will be created in which all stakeholders will be represented for a proportion not lesser than that stated for elective positions (25%); this women's representation at the steering committee will be set at the project start in terms of composition and nomination from the different profession. This committee will have the following main assignments: (i) set roles and responsibilities of project keys actors; (ii) address arising issues related to project implementation; (iii) approve work plans, annual budgets, project operational and financial reports (quarterly progress, mid-

[15] *CREDD is the regional committee for environment and sustainable development chaired by the Wali and assisted by the regional representative of MEDD namely the Regional Delegate (DREDD)*

term review, M&E, financial audit); (iv) prepare an annual summary report to the MEDD and MHA. It meets twice a year upon the request of its chairperson, the General Secretary of the Ministry of Environment and Sustainable Development (MEDD); it's co-chaired by the General Secretary of Hydraulic and Sanitation (MHA) with the support of the project national director acting as secretary. It's composed of:

- General Secretary of the Ministry of MEDD: Chairperson;
- General Secretary of the Ministry of MHA: First deputy chairperson;
- Director of Landscape Management (MHUAT); 2nd deputy chairperson
- The General Director of Local Governments (MIDEC)
- CCPNCC Coordinator (MEDD)
- The Director of Hydraulic (MHA)
- The Coordinator of PNISER (MHA)
- The Director of Protection of Nature (MEDD)
- The Director of Classified Establishments and Littoral (MEDD)
- The Director of Agriculture (MDR);
- The Director of Animal husbandry/Livestock (MDR)
- The representative of Social Affairs, Children and Women (MASEF)
- National Office of the Meteorology (MET);
- The national project director (NPD), as acting Secretary.

From the Technical and Financial Partners: The GTEDD, GTEDD/CC: there will be oversight functions as to foster synergy while preventing duplication amongst projects;

The key regional public institutions directly involved in the implementation of the project include:

- The CREDD, chaired by the Wali
- DREDD as facilitator and co-chairperson of the CREDD
- DRHA, DRDR, DRMASEF, MAED regional representative, the target Municipalities, etc.

Project Partners

- Representatives of ongoing parent projects
- Two representatives of the population including a woman, a nomad
- Two representatives of the civil society.

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):

Climate change adaptation was not a focus of PNISER; the project integrates agriculture and water resource management but the GEF project takes this integration further to include pastoral and forest resources, raising hereby the additionnality. The socioeconomic benefits may be derived from water activities, plants (grass and tree) actions and the combination of the two resources. The project will therefore maximise the benefits generated by these and minimize their losses as induced by climate change. This implies from the project to strengthen activities that increase benefits obtained from **water supply** to selected communities with additional benefits of (i) providing water for cattles drinking; (ii) by creating retention basins the project will open new frontiers to grasslands that were once remote and inaccessible for animal grazing; (iii) afforestation and regeneration of community forests; (iv) Water conservation and increased water use efficiency will benefit village women by reducing their workload in having to search for water while facilitating hygiene and sanitation. **Plants** play also an important role in the daily lives of the poorest rural populations; they offer a wide range of beneficial services, thus contributing to population's well-being through their multiple usages as food intakes, medicine, fodder, heating, and craft building. Community forest products can be used for income generating activities by womens groups. The Project will also contribute to : (i) the development of plants of both pastoral and forest sites for their benefits to mankind but also as animals fodder intakes that feed the animal and increase its productivity (from birth rate to production of milk and meat) ; and (ii) incomes of rural households and nomads induced by animals productivity increase and other project agricultural and natural resources (pastoral, forest) expected outputs. Therefore, **direct benefits** are derived from: (i) an

anticipation of external shocks by beneficiaries through planning, capacity building and awareness activities on climate change ; (ii) improvement in water harvesting and availability near pastoral and forest sites for livestock benefits ; (iii) enhancement and intensification of irrigation farming system around pilot wetlands through resilient water investments activities and infrastructures ; (iv) sustainable management of shared natural resources in grazing and transhumance areas and routes via innovative tools like biosphere reserve and payment of ecosystem services; (v) an increase in rural populations' livelihoods through protection of the production sites and water sources from dune encroachment and erosion including those of PNISER; (vi) long-term income and employment opportunities for women and youth through IGAs activities among which those free of GHG emission or promoting charcoal energy saving. the additionality of the project comes also from quantifiable direct benefits. On the other hand, among the project socioeconomic benefits it may be distinguished between non-cash and cash benefits derived from each project component. While the project focuses on woman privileges particularly in non-cash benefits like time and physical efforts savings associated with pain relief in acquiring most of natural rural livelihoods (water, wood, etc.), it is also affording substitutes of some these items. The project is promoting also IGAs that are also entirely devoted to woman like gardening, non-timber products. The project is therefore designed to empower female rural woman and to increase her independence and status wherever she is (herder or farmer), in individual initiative or in community-wide activities. This is very relevant particularly in the Mauritanian society, where the woman is indeed vulnerable economically while capable of playing a valuable role in the decision-taking process; in that context she is able to foster transformative social change. The project, through its implementation of targeted adaptation activities, aims to provide realistic and sustainable alternatives to PNISER that can have a positive impact on working conditions and welfare status of the woman and her associated vulnerable group (gender) to which is attached the youth (girls and boys) and the elders. Among components identified activities directly targeting woman include: (i) **Awareness and Training**: Specific activities of technical training and education to be organized by the project on processing and preservation of vegetables and non-timber products, on improved stoves and on hygiene and sanitation are specifically targeting woman and youngsters as they are the most laborious in the rural areas and the main supportive and available manpower for the household activities and security in the absence of the heads. (ii) **Access to clean water**: The water supply tasks, according to tradition and culture, no matter in which community, they are assumed in most cases by women and young boys and girls. The chore done by this group to meet domestic needs of their families, weights upon their time and budget. The limited or unsuited water exhausts means accentuate the difficulty of its pumping. Based on this situation, the implementation of the project activities will enhance and make accessible water infrastructure to women, girls and vulnerable groups and to positively impact on their well-being (personal hygiene, laundry, improvement of education through the education of girls, income-generating activities or community activities, cultural or political). (iii) **Diversification and strengthening of rural agro-pastoral populations' livelihoods and sources of income** : Rural woman is a key player in the management, use and conservation of natural resources from which she withdraws her livelihoods (harvesting, processing, crafts ...) and source of cash liquidity and cash from non-timber products. The project activities will therefore enable the woman to increase and diversify her incomes by providing: (i) a support to her community organization meant for preservation and processing agricultural products and marketing non-timber products while facilitating market access and competitiveness; (ii) the introduction of improved stoves mechanism that supports fabrication and dissemination of stoves and solar cooker as well; this activity will create jobs while protecting the environment through the efficient use of natural resources (wood and coal), and improving the conditions of health and hygiene of the households through a gain of time and money that woman can also use for other diversified opportunities. (iv) **Knowledge management and capitalization, Monitoring & Evaluation**: In this component, gender plays a capital role. As the most active actor in rural areas and the most stable among all woman as he lead of the youth and the vulnerable group represent the best channel for dissemination and capitalization of adaptation good practices. The production of medical-based drinks from forest products is one of the local best examples of possible project intervention in which woman may play a leading role. In general terms, the project expected results may benefit: (i) at least 30% of every project targeted site; (ii) two thirds of the income generating activities exploiting natural resources with a focus on the female head of household; (iii) and a quota of at least 30% of the bodies responsible for infrastructure management, production tools and mechanisms for

monitoring and evaluation. As local laws advocates gender equality this AfDB and GEF-LDCF project proposes identifying and monitoring gender disaggregated indicators to track similar project results. These include: (i) The percentage of women in each communities based associations; (ii) Led participation of women in the management bodies of water infrastructures and other project initiatives; (iii) An equal proportion of women participating in experiences exchange visits; and (iv) Disaggregated socio-economic indicators of project impacts (food security and poverty). **Indirect socioeconomic benefits** or non-quantifiable comprise : (i) secure understanding between agriculturalists and nomads herders who shaped through policy dialogue on PES a way to end a long-lasting conflict; (ii) the seasonal work related to market garden crops, and the construction and repair of solar cooker and charcoal improved stoves ; (iii) nutritional and environmental education of women will produce additional benefits in improving the gender managerial and social integration capacities ; (iv) environmental induced benefits will also be significant to build resilience; (v) Institutional benefits will range from organizing the populations into AGLCs around shared natural resources, training the DREDD, DRHA and the field staff to provide suitable advisory counseling services; the involvement of technical services and local authorities in support of productive community investments that are essential for rural development (water catchment facilities, community stoves construction and repairs), and introducing innovative tools as to improve water management and reduce erosion.

Gender dimension.

The gender dimension has been addressed at the inception of the project formulation through the assignment of a Gender specialist. The methodological approach of the formulation has focused on the diagnosis and analysis of the socio-economic situation and data disaggregated by gender.

- The results of the field study have shown that as regard to climate change the poor are the main vulnerable group, especially women and youth. As a result, the project design has taken this aspect into account at all stages of the formulation.
- The project, through the proposed targeted adaptation to climate change activities, aims to provide realistic and sustainable alternatives that can have a positive impact on the socio-economic situation of these vulnerable groups. These activities will improve the working conditions and lives of women and girls.
- Among the identified actions directly targeting women include:
  - Awareness and Training: Specific technical training activities regarding processing and conditioning vegetables and non-timber products have been identified ; improved hygiene and sanitation actions are suggested by the project giving priority to women and young people because they are the most active in the field and are the main breadwinners for households at the rural level.
  - Access to clean water: Water supply within a job description between the household tenants, remains a devoted task to woman. According to the traditions and cultures, in any specific Mauritanian community, this is an undisputed specialization of woman and girl. The chore carried by the woman and the girl to meet domestic needs weigh on their time and pain. Limited or poorly suited to pumping equipment accentuate the difficulty of water supply.
  - Given this situation, the implementation of activities under this project will enhance and make accessible water infrastructure to women, girls and vulnerable groups as to positively impact their well-being (personal hygiene, laundry, improvement of education through the education of girls, income-generating activities or community activities, cultural or political).
  - Diversification and strengthening of livelihoods and sources of income for rural agro-pastoral populations: Rural women are key players in the management, use and conservation of natural resources from which they withdraw their income (harvesting, processing, crafting ...)
  - The work of the project will enable women to increase and diversify her income from the exploitation of natural resources and gardening activities: (i) The producers and women's groups will receive support for the organization of activities of preservation and processing of agricultural products and in non-timber products. Product quality will make them more competitive and improve their access to markets; (ii) The introduction and dissemination of improved stoves will create jobs, protect the environment through the efficient use of natural

resources (wood and coal), to improve her conditions of health and hygiene and put the household in a gain of time and money that woman can use for other activities.

- Management and capitalization of knowledge, Monitoring & Evaluation: In this component, gender and development are taken into account through the participation of woman, youth and vulnerable groups in the activities of knowledge capitalization and good practices, duplication and dissemination of good practice developed by woman such as the production of a medical-based drink out of four local forest products. The completion of study tours and exchange of experiences specific to women at the national level and in the sub regions to share knowledge and exchange experiences. The data collected for monitoring and evaluation of project impacts are broken down by region and by gender.

In general terms, the project expected results will benefit woman for at least 65% of targeted population in sensitization activities; two thirds of the activities generating income from the exploitation of natural resources will focus on households headed by women and a quota of at least 30% of the bodies responsible for infrastructure management, production tools and mechanisms for monitoring and evaluation.

Sustainability

Basically, the aim of REVUWI project formulation is to provide the key ramp to set sustainability for PNISER activities. Indeed, the project is articulated to the national action plan of adaptation to climate change which by definition seeks to prolong positive impact of actions initiated under PNISER as to strengthen the resilience of the beneficiaries and their livelihood pastoral and forest sources. The fundamental objective of the REVUWI is therefore to provide the necessary technology package to establish sustainability in PNISER activities and outcomes. Indeed, the project is focused at the national level on climate change adaptation, which, by definition, seeks to prolong the positive impact of REVUWI initiated actions. The purpose of linking REVUWI to PNISER is inherently justified by the need to correct the restrictive PNISER developmental approach to tap natural resources for the sole purpose of increasing productivity, rather than seeking to ensure at the same time durability of its outcomes. This will be achieved by acting on all fronts likely to ensure a sustainability of this objective. The socio-economic sustainability of the project will be strengthened as a result of choosing and promoting appropriate technologies that are likely to respond to the adaptation of the water sector investments and to the establishment of rules on good environmental and natural resources management. Similarly, the ownership and use of technologies to adapt to adverse impacts of climate by the beneficiaries will allow them, in the future, to break with the present and past tradition of shifting transhumance and nomadism and, instead, obtaining grasslands in all seasons. This commitment of the beneficiaries is, in itself, a measure of sustainability since their involvement in the activities implies the consent to maintain and sustainably manage the equipment and infrastructure set up at their disposal. The availability of a mechanism to fund activities allows beneficiaries to access financial means. And yet, often, these are means that are needed to launch personal or collective activity in order to allow populations to be released from their financial contribution to access basic services. The project aims to promote an inclusive approach that combines the development efforts advocated by PNISER to the additional adaptation needs promoted by REVUWI. Whereas the former aims at maximizing water for drinking and production and the fight against poverty, the LDCF component aims at strengthening the resilience of this entire mechanism to climate change impacts, which results in a combination that promotes sustainability. In order to ensure the long-term implementation of this integrated adaptation approach, the project will adopt a financial and institutional sustainability strategy. This will include pilot financial mechanisms in the project areas in order to reduce the underlying risks to sustainability and to support the implementation of some activities and the integration of the adaptation as a result of IGAs. The strategy involves a strong willingness by the populations, including nomads to participate in resolving problems that affect the long-term sustainability of the natural resources and the well-being of the local communities among which and foremost women. The strategy will capitalize on all the good practices drawn from the experiences implemented by similar projects integrating climate change adaptation and on lessons learned from similar projects in Mauritania and in the sub-region. The institutional mechanism is an essential element of PNISER's exit strategy and sustainability. Indeed, the project will privilege the existing institutions as the executing agencies of the components, to which the

project will provide the necessary financial support. Thus, the implementation of components 1 and 4 will be assigned to the competent structures of MEDD; the implementation of component 2 to those of MHA and MDR (water infrastructures) and MEDD (wetlands); and the component 3 to the competent structures of MEDD and MDR. The LDCF funds are grants and do not aim to maximize, as in the case of PNISER, the opportunity of a dollar invested or even a high internal rate of profitability of the investment, but rather, they aim to finance the incremental cost needed to ensure the sustainability of the activities. The project will be linked to continued regional and global programmes to ensure the information sharing and dissemination at a larger scale through the use of the UNFCCC, GEF and other experience sharing platforms.

Replicability

The scarcity of natural resources in Mauritania is not an illusion. It is clear that degradation of natural resources has reached its ultimate and final stage since the 1970's, which now requires proven adaptation measures for convincing the public that this can be reversed. Colossal efforts are needed to raise awareness among the public and decision makers in order to alert them to the seriousness of the situation. Capacity strengthening is therefore necessary at all levels. Although the vegetation and water began to meet the population needs from the late decade, they are still rare and precious, and call for a constant observation and monitoring. Without the provision of water measurement kits, the populations lose large quantities of water every year due to disordered communities' withdrawals, which costs them dearly. These kits, once set up allow the population to monitor the quantities available and thus through good management may mitigate the uncertainty while awaiting upcoming rainfalls.

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

The project is cost effective in many ways. First, the following were the guiding principles in the project design: (i) REVUWI proposed adaptation activities have been selected based on past experiences and weaknesses of alternative approaches of GEF, LDCF and other partners including AfDB executed projects; these initiatives incorporate lessons learned from past projects design and implementation as regards to cost effectiveness of selected activities of production, maintenance, capacity building, training, procurement, delivery, etc. compared with other alternatives ; (ii) Water infrastructure design under PNISER will benefit from actions (watershed protection and anti-erosion activities) introduced by REVUWI in order to become resilient to climate change; (iii) Appropriate institutional settings will be put in place to strengthen management and collaboration between the DREDD and other stakeholders (DRHA, DRA, DRE, Municipalities, etc.) at the local level; (iv) Appropriate training and sensitization will feel the gap on missing knowledge about climate change; manuals and guidelines will be provided wherever needed; (v) Necessary technical studies will be conducted as to address cost effectiveness while ensuring successful achievement of implemented activities; (vi) Reducing procurement delays will be addressed by the procurement specialist of PNISER; (vii) The project results framework as well as the Adaptation Monitoring and Assessment Tool (AMAT).specify baselines and targets for each adaptation outcome.

Besides these guiding principles, the project will base its implementation on community based approach that includes a concentrated effort on community participation, awareness raising and training. The approach will involve local people in plantation activities of agroforestry and tree planting, managing natural resources while maintaining local extensive grazing. Implementing concrete adaptation activities with community participation is cost effective when they encompass incentives for labour substitution. Indeed, the management of natural resources by local communities has proven more effective than management at higher levels. ProGRN, a GIZ supported project, has monitored progress throughout its program, and found that 90 percent of beneficiaries confirm strong ecological benefits of the transfer of resource management responsibilities to the AGLC level. Since 2004, the vegetation cover index (ICV) has almost quadrupled in areas managed by AGLCs, whereas it has over the same period diminished to a quarter of the base value elsewhere. At the same time, there is an immediate and strong correlation between the ICV and economic benefits, in particular for livestock, but significantly also for dry fodder (at a price of 100 UM, equivalent to 75 US cents, per 10 kg dry fodder) which is 20% of the price of cereals but is produced in far greater quantities. Interventions will require relatively low material investments and yield a comparatively high return, while being more accessible for community

understanding and appropriation. Dune fixations, agroforestry, vegetable garden, selling non-timber products or solar stove cooker are all well-known examples of low cost interventions with potentially high returns. Concrete interventions will be carefully costed with community involvement – including the costs of depreciation and eventual replacement – before decisions are taken on implementation. Detailed cost effectiveness analysis will be made for each community adaptation plan, using a methodology developed by the project, comparing measurable outcomes with all feasible options and risk analysis. Where functioning markets exist, the project will use cash-based support modalities to further increase cost efficiency. The cycle of unsustainable coping mechanisms cannot be broken without offering short-term sources of income and food security. In this way, medium - and long term alternatives to unsustainable sources of income (overgrazing, deforestation, etc.) will be secured through income generating activities. The income building activities under the project could receive additional support through the GEF Small Grants facility. A joint approach has been discussed between SGP and the project formulation team and the Government; the project will facilitate the application by village associations for GEF small grants according to requirements and complementarity to the project's objectives. Cost effectiveness is also promoted though a landscape approach that focuses on concrete activities within village clusters that form a coherent ecological and livelihood zone. The merit of working in villages over large geographic areas is cost efficiency shared ownership of assets. Relatedly, the project will specifically address the issue of ad-hoc and small scale adaptation efforts. The strategy considers that fragmented responses may address a local issue, however, without a combined community based and ecosystem based approach it is unlikely that context specific actions which meet the priorities of local populations will succeed. The project approach specifically aims to reduce fragmentation by targeting village clusters organized by ecosystems - landscapes with shared water points, animal migration routes –as well as production systems (vegetable crops for women, etc.). The integrated focus on the management of natural resources will also serve to processes that promote indigenous knowledge to reduce and mitigate climate change related risks, and opportunities for income generation. The co-location of activities under the three project components will promote operational efficiency and facilitate efficient and effective monitoring. The approach will also lead to the creation of models which are expected to be replicated in the project area and beyond. The full alignment of the project to Government-approved and tested methodologies and structures will further increase cost-efficiency; for example, instead of pursuing its own ecological monitoring system, the project will be part and parcel of the effort under PANE II and the PSEDD. Similarly, the project will apply the methodologies developed by MDR for translating knowledge between national, regional and local actors, as well as the methodology to establish and support decentralized natural resource management through AGLC developed by MEDD with assistance of German cooperation (ProGRN).

C. DESCRIBE THE BUDGETED M &E PLAN:

The project will be monitored through the M& E activities in Table 2. The M&E budget is provided in the Table 2 below. The M&E framework set out in the Project Results Framework in Annex A of this Request for CEO Endorsement is aligned with the AMAT tool.

Project start: A Project Inception Workshop will be held within the first two months of project start with those with assigned roles in the project organization structure, AfDB country office and, where appropriate/feasible, regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership of the project results and to planning the first year's Annual Work Plan.

The Inception Workshop should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project: detail the roles, support services and complementary responsibilities of the AfDB Country Office vis-à-vis the project team; discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms; discuss the Terms of Reference for project staff again as needed.
- Based on the Project Results Framework and the LDCF related AMAT set out in the Project Results Framework in Annex A of this request for CEO Endorsement: finalize the first Annual Work Plan;

review and agree on the indicators, targets and their means of verification; and recheck assumptions and risks.

- Provide a detailed overview of reporting, M&E requirements: agree on and schedule the M&E Work Plan and budget.
- Discuss financial reporting procedures, obligations, and arrangements for annual audits.
- Plan and schedule Project Steering Committee (PSC) meetings: clarify the roles and responsibilities of all individuals in the project organisation structure and plan meetings; preferably hold the first PSC meeting within the first 12 months following the Inception Workshop.

An Inception Workshop Report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided upon during the meeting.

Baseline: a baseline study will be conducted during the first year of project implementation to refine the M&E Framework, develop a strong Performance Measurement Framework, collect baseline data regarding selected indicators, and define roles and responsibilities in conducting monitoring activities throughout the lifespan of the project. This study will also lead to the development of a specific M&E Manual.

Quarterly: Based on the initial risk analysis submitted in this this Request for CEO Endorsement, the risk log shall be regularly updated. Risks become critical when the impact and probability are high

Annually: The Annual Project Review (APR) is a key report and will be prepared to monitor progress made since project start and, in particular, for the previous reporting period.

The APR will include, but will not be limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project outcome (annual);
- Lessons learned/best practices;
- Annual Work Plan and other expenditure reports; and
- Risk and adaptive management.

Periodic Monitoring through site visits: The AfDB Country Office will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the PSC may also join these visits. A Field Visit Report will be prepared by the AfDB country office and will be circulated to the project team and PSC members no less than one month after the visit.

Mid-term of project cycle: The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (expected to be in June 2016). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course corrections if needed. It will focus on the effectiveness, efficiency, and timeliness of project implementation; highlight issues requiring decisions and actions; and present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project’s term. The organization, terms of reference and timing of the Mid-Term Evaluation will be decided after consultation between the parties of the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the AfDB Country Office. The LDFC/SCCF AMAT will also be completed during the mid-term evaluation cycle.

End of Project: An independent Terminal Evaluation will take place three months prior to the final closure of the project. The terminal evaluation will focus on the delivery of the project’s results as initially planned (and as corrected after the Mid-Term Evaluation, if any such correction took place). The Terminal Evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the AfDB Country Office. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response.

Learning and knowledge sharing: Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

When relevant, the project will identify and participate in scientific, policy-based roundtables as well as any other networks that may benefit project implementation through lessons learned. Likewise, the project will identify, analyse, and share lessons learned that might be beneficial in the design ando

implementation of similar future projects. There will be a two-way flow of information between this project and other projects of a similar focus.

Audit: The project will be audited in accordance with AfDB Financial Regulations and Rules and applicable audit policies.

Table 2: **M&E budget**

ACTIVITIES	UNITS	NUMBER /QUANTITY			T	UP	AMOUNT IN $			TOTAL
		2015	2016	2017			2015	2016	2017	
SUB COMPONENT 4.1 : Knowledge management										
Inventory of local resilient knowledge	Inventory	8	0	0	8	11,667	93,333	0	0	93,333
Organisation of open house days	Days	3	5	0	8	4,500	13,500	22,500	0	36,000
Organisation of inter-Wilayas visits	Visits	2	4		6	6,667	13,333	26,667	0	40,000
Experiences sharing with foreigners	Visits	1	1	1	3	11,667	11,667	11,667	11,667	35,000
Elaboration of good practices referential	Referential	2	2	0	4	12,000	24,000	24,000	0	48,000
Partnership agreements with radios	Package						5,000	5,000	5,000	15,000
Advertising campaigns	Package						3,000	3,000	3,000	9,000
Political dialogue	Package						25,000			25,000
Sub-component 4.1							**188,833**	**92,833**	**19,667**	**301,333**
SUB COMPONENT 4.2 : Monitoring & Evaluation										
Elaboration of referential situation	Consultation	1			1	66,667	66,667	0	0	66,667
Elaboration of M&E manual	Consultation	1			1	11,667	11,667	0	0	11,667
ME validation workshop	Workshop	1			1	10,000	10,000	0	0	10,000
Midterm & final Evaluation	Package									60,000
Sub-component 4.2							**88,333**	**0**	**0**	**148,333**
Grand Total							**277,167**	**92,833**	**19,667**	**449,667**

Table 3: **Project Monitoring and Evaluation Plan**

Type of M&E activity	Responsible Parties	Budget USD *Excluding project team staff time*	Time frame
Inception Workshop & Report	▪ Project Director - DRDR	Indicative cost: 10,000	Within first two months of project start up
Baseline studies	▪ Project Director - DRDR ▪ Consultants	Indicative cost: 30,000	Within first year of project implementation
Measurement of Means of Verification of project results.	▪ AfDB country office and Project Director will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. ▪ Project Management Team, esp. M&E expert	To be finalized in Inception Phase and Workshop.	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*	▪ Oversight by Project Director ▪ Project Management Team, esp. M&E expert ▪ Implementation teams	To be determined as part of the Annual Work Plan's preparation. Indicative cost is 25,000	Annually prior to ARR/PIR and to the definition of annual work plans
ARR	▪ Project Director ▪ AfDB Country office	None	Annually
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term Review	▪ Project Director ▪ AfDB Country office External ▪ Consultants (i.e. evaluation team)	Indicative cost: 30,000	At the mid-point of project implementation.
Terminal Evaluation	▪ Project Director ▪ AfDB Country office External ▪ Consultants (i.e. evaluation team	Indicative cost : 45,000	At least three months before the end of project implementation
Visits to field sites	▪ AfDB representatives ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for ADB country office
TOTAL indicative COST Excluding project team staff time and AfDB staff and travel expenses		USD 140,000 : (+/- 2.2% of total LDCF budget)	

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)*
Mohamed Yahya Ould Lafdal	GEF Operational Focal Point	MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT	JULY 06, 2014

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
ASSOUYATI, MAHAMAT			MOUMNI, MONIA	216-71102344	M.MOUMNI@afdb.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).

Applicable GEF Strategic Objective and Program:
CCA-1: Reduce vulnerability to the adverse impacts of climate change
CCA-2: Increase adaptive capacity to respond to the impacts of climate change
CCA-3: Promote transfer and adoption of adaptation technology

Applicable GEF Expected Outcomes:
Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas
Outcome 1.2: Reduce vulnerability in development sectors
Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas
Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas
Outcome 2.2. Strengthened adaptive capacity to reduce risks to climate-induced pastoral and forest resources losses
Outcome 2.3: Strengthened capacity awareness and ownership of adaptation and climate risk reduction processes at local level
Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas

Applicable GEF Outcome Indicators: (following AMAT tool)
Indicator 1.1.1. Adaptation actions implemented in national/sub-regional development frameworks (no. and type)
Indicator 1.2.3: Number of additional people provided with access to safe water supply and basic sanitation services under the conditions of changing climate (disaggregated by gender)
Indicator 1.3.2. % increase per capita income of farm households due to adaptation measures applied
Indicator 2.1.1. Relevant threat information disseminated to stakeholders (Yes/No)
Indicator 2.2.1. No. of targeted institutions with increased adaptive capacity to minimize exposure to climate variability
Indicator 2.3.1. Targeted population awareness of predicted adverse impacts of climate change and appropriate responses (Score) – Disaggregated by gender
Indicator 3.1.1. % of targeted groups adopting adaptation technologies by technology type (disaggregated by gender)

	Indicators	Baseline	Targets at End of Project	Source of verification	Risks and Assumptions	
					Risk	Mitigation measure
Project Objective[16] To improve rural communities' livelihoods and means to combat poverty through managed water investments and activities destined to pastoral and forest resources in the southern Wilayas of Mauritania	Average rate of access to drinking water and sanitation as well as pastoral water	53% for drinking water ; 21% for sanitation; Volume per head of livestock to be defined in a participatory manner at project start	80% for drinking water by 2020 65% in 2020 for sanitation and 10 L per head of livestock by 2018	Sources : National surveys, Reports of EPCV, ONS, MHA, MDR and DRED	▪ Risk: Difficulty of coordinating, planning and implementing programs and investment activities in the water sector and the resilience of the sector to CC ▪ Risk: Low capacity to appropriate recipients	▪ Mitigation measure: Capacity Steering Committees at both the central level and in each Wilaya of the project area and the capacity of various structures involved in these programs ▪ Mitigation measure: intense training and awareness of beneficiaries at all levels
	Rate of growth of rural incomes in the project area	Average income is estimated at 129,000 MRO / person / year (EPCV 2008) and will be updated at project start.	The average income of the rural population in the project area has increased by at least 10%	Sources : National surveys, Reports of EPCV, ONS, MHA, MDR & DREDD & reports on project activities		
Result 1[17]**:** Sectoral strategies and planning mechanisms of MEDD, MHA, MDR, MIDEC and local municipalities of Brakna, Gorgol, Tagant, Guidimaka, Assaba, Hodh Gharbi Hodh Chargui and Trarza Wilayas integrate climate change	▪ Nb of sectoral strategies (of MEDD, MDR, and MHA) and decentralization policy (MIDEC) that incorporates CC issues ▪ EbA guidelines developed as to promote mainstreaming adaptation to CC into wetlands management ▪ Nb of communal development plan (CDP) that include specific	▪ Water sector strategy update is planned by PNISER but not with the objective of incorporating CC issues ▪ Strategic and policy instruments of most key rural sectors not incorporating CC issues and EbA unknown	▪ 3 strategies reviewed: SNDD, SHA, SDR ▪ MIDEC facilitating generalization of communal development plans that integrate CCA ▪ Un document edited, published & disseminated through five (5) workshops organized on EbA ▪ 20 CDP reviewed. Development Plans	▪ Policy documents ▪ Guidelines document and Workshop proceedings	Lack of adhesion of the population Lack of support from the authorities Lack of qualified partners and service providers	

[16] *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR (APR: Annual Project Review (*
[17] *All outcomes monitored annually in the APR/PIR.*

	measures and a budget for CCA	▪ Existing CDPs do not take into account climate risk	of the targeted municipalities are updated to include climate risks and climate change issues, and to support the implementation of adaptation actions : agroforestry and tree planting at village level	▪ CDP		
	▪ Nb of persons trained in and aware of adaptation to CC issues including EbA (disaggregated by gender)	▪ Roughly, less than 2 out of 23 civils workers are aware of CCA	▪ 80% of civils workers are aware of adaptation to CC	▪ Training modules & sessions reports		
	▪ Nb of persons trained in and aware of best practices of soil and water, forests and pastoral resources resilient conservation (disaggregated by gender)	▪ Soil/Water and NR resilience best practices of conservation are ignored by most of the civil workers and all farmers and herders including women	▪ 55,000 persons trained in and aware of best practices of soil and water, forests and pastoral resources resilient conservation (among whom 65% are women and youth)	▪ Training modules & sessions reports		
	▪ Nb of persons trained in and aware of best practices of integrated sustainable management of forests and rangelands in arid zones (disaggregated by gender)	▪ Forests and rangelands are opened spaces of free access to animals; merely visiting transhumant do care of sustainability of shared resources management	▪ 20,000 persons trained in and aware of best practices of integrated sustainable management of forests and rangelands in arid zones (among whom 70% are women)	▪ Proceedings of modules and training sessions		
	▪ Nb of training institutions benefiting from CC and EbA training sessions (disaggregated by categories[18])	▪ No institution has CC issues in its training curricula except ISET in its research agenda	▪ 90% of training institutions benefiting from CC and EbA training sessions (Among which UdN, ENA, ISET, CNERV, CNRADA, ENFVA, CFCB, CMAB, etc.)	▪ Training modules & sessions reports	Assumptions: Lack of adhesion of the population Lack of support from the authorities Lack of qualified partners and service providers	
	▪ Nb of wetlands characterized and benefitting from EbA system of management	▪ Wetlands are communities' based owned sources of livelihoods and sites for settlement	▪ 5 wetlands	▪ Inventory reports & monitoring reports		
	▪ Nb of persons benefiting from hygiene / sanitation (H / S) programme	▪ PNISER is launching hygiene and sanitation activities in only some Wilayas; Guidimaka and Trarza not included	▪ 20,000 persons benefiting from hygiene / sanitation (H / S) programme	▪ Reports on awareness and latrines deliveries		
	▪ Nb of Gender rural groups structured, and strengthened for IGA implementation	▪ No women groups structured in the rural area as to be capable of implementing IGAs	▪ 40 women groups capable of implementing IGAs	▪ APRs/PIR ▪ Legal act creating gender groups		
Result 2: Drinking and pastoral water infrastructures in the Wilayas of Brakna, Gorgol, Tagant, Guidimaka,	▪ Sustainable water management practices introduced to increase access to water under existing and projected climate change	▪ Access to drinking water almost satisfactory in settled sites but threatened by recurrent drought	▪ Additional 55,000 people (35,000 women and 20,000 men) will be supplied with an average daily drinking water consumption of 30L/capita by end	Reports of MHA, MDR, project surveys and reports	The decentralized government structures (DRHA and DREDD) do not have the	The respective municipalities are willing to cover the delivering costs of DRHA and

[18] *Training institutions include : School of Agricultural Extension Professionals of Kaédi (ENFVA); Training Center for Cooperatives and Rural Communities of Boghé (CFCB), School for Agricultural Equipment Workers of Boghé (CMAB), Institute for Higher Technology Education of Rosso (ISET)*

Assaba, Hodh Gharbi, Hodh Chargui and Trarza are resilient to climate change	▪ Nb of people (to be determined at project start) supplied with an average consumption of drinking water of 20 L/day/capita and ▪ Nb of cattle fed with an average of 8 L/day/head ▪ Volume of wetlands water resources in the project area for agro-forestry and pastoral needs	impacts ▪ Unsatisfactory access to water in rangelands areas ▪ Insufficient water supply limits agroforestry and animal water supply	of 2017 ▪ 600 000 head of cattle have access to additional water with an average daily consumption of 10 L/head by end of 2017 ▪ Water infrastructure and activities restore wetlands water supply services		necessary support from the Government.	DREDD deemed relevant
	▪ Good practice in water conservation and soil (CES / DRS) and techniques of sustainable land and water management (SLWM) resilient to degradation and erosion and favorable to feed groundwater table	▪ Damage and other negative impacts associated with flooding, erosion, silting and droughts are important and poorly understood in 2014	▪ A significant reduction in damage and other negative impacts associated with (i) 70% of the population (65% of women) having access to improved water supply and management in 2017; and (ii) 85% of livestock herders covered by a monitoring and early warning system and a response action scheme	Reports of MHA, MDR, DREDD and project surveys and reports		
Result 3: Diversification and reinforcement of resilient livelihoods and sources of income revenues of rural and agro pastoral populations in targets Wilayas activities are promoted	▪ Nb of households that improved their revenues from protection and regeneration of pastoral and forest activities	▪ Income generation is generally very low, especially within targeted communities which are considered as the most vulnerable to CC impacts ▪ Average household income under 100,000 MRO	▪ Average income per household increases by 10% per Year ▪ 35,000 households from which 70% are engaged in IGA: (i) vegetable gardening and (ii) crafting (weaving, basketwork); increased their income by 10% on average per Year	Local assessments at the community level (Questionnaire based appraisal - CBA) APRs/PIR	<u>Assumptions</u>: Nomad herders do not see the benefit of new practices or social (including gender related ones) conflicts hinder taking up the practices National service capacities are inadequate to accompany herders' actions (meteorological services, advices/vulgarization, etc.) Capacities of agencies are not strengthened enough. Weak functionality of the Water Users Associations	
	▪ Nb of resilient pastoral and forestry activities including agroforestry developed as to improve rural population livelihoods	Type and level: 0	▪ 200 Ha of hedgerows developed with fire tolerant species (leptadenia pyrotechnica) as to limit bushfires through firebreaks in the rangelands ▪ 4 classified forests endowed each with an implemented management plan that promotes productivity	APRs/PIR		
	▪ % of the targeted women adopt adaptation to climate change technologies including diversification of rural livelihoods (disaggregated by gender)	0%	▪ 50% of the targeted rural population adopt adaptation technologies (improved stoves, solar cooking stoves, PES and Reserve Biosphere technologies) among whom >65% gender: non-timber products manufacturing;	Review of strategic documents and Local Development Plans APRs/PIR Policy reviews as part of APRs/PIR		
Result 4: Knowledge and best practices of resilience to climate change are monitored, evaluated and disseminated	Type and Nb of monitoring systems in place	None – monitoring system to be developed as part of the project inception	A complete M&E system in place, including a Performance Measurement Framework and data collection protocols	M&E system	▪	
	Nb of contributions to Adaptation Learning Mechanism	0	At least 1 contribution per year	Adaptation Learning Mechanism		

Component 1: Strengthening institutional and local capacities on sustainable resilience of natural resources ***Outcome 1*** **:** *Institutional and local capacities are strengthened on sustainable resilience of natural resources*	
Outputs	**Activités**
1.1 Public services, municipalities and local community organizations integrate climate risks into policies, plans and strategies	1.1.1 : Mainstreaming climate change into existing key sectoral strategies (water, pastoralism and forestry) 1.1.2 : Reviewing 20 existing and 10 planned Communal Development Plans in target regions[19] by (i) integrating management of climate risks: (ii) introducing adaptation into planning; and (iii) providing funding for resilience-building activities. 1.1.3 : Integrated climate change risk and impact into Regulatory reforms, by laws, and environmental impacts assessments tools
1.2 : Communal Development Plans are reviewed and updated to integrate effective management of climate risks and provide financing for resilience-building activities.	1.2.1 : Update 20 existing and 10 planned Communal Development Plans (CDP) integrating climate change adaptation and management of climate risks into planning 1.2.2 : Support implementation of the 20 existing and 10 planned CDP in target regions[20] by providing funding for resilience-building activities/infrastructures that effectively strengthen resilience of local residents
1.3. Training activities on climate change materials addressing resilience of pastoral and forestry resources	1.3.1 : Train 8 Extension Service agents and 42 municipalities administrative assistants from target regions on integrating climate change risks into planning 1.3.2 : Train 250 villagers in agro-forestry and resilient practices into natural resources management 1.3.3 : Train herders on resilient driving patterns of herds into operating water systems (including monitoring of water regime, pastoral water infrastructures,
1.4. Conduct awareness building activities with local communities and local authorities	1.4.1 : Conduct awareness building activities with local communities and local authorities on resilient practices for recurrent specific climate change impacts (EbA, PES, guidelines for wetland management, including hygiene and sanitation and gender various concerns) 1.4.2 : Conduct awareness building activities with local communities and local authorities on creating a Reserve Biosphere in El Athef ecosystem, 1.4.3 : Develop and disseminate EbA guidelines that promote mainstreaming adaptation to CC into wetlands management systems
1.5. Promote structured, and strengthened Gender groups capable to implement resilient IGAs	1.4.1 : Structuring women within villages communities into associations or cooperatives for natural resources management 1.4.2 : Strengthening existing women's groups in accounting and marketing management skills to support resilient IGA
Component 2 : Resilience of water sector investments and activities ***Outcome 2:*** *Water sector investments and activities are resilient*	
Outputs	Activities
2.1 Improving mechanisms that monitor and restore water resources	2.1.1 Provide and install 85 reference precipitation gauges 2.1.2 Install 165 limnimetric scales.
2.2 Strengthen ecological services of target major wetlands	2.2.1 Construct 20 pastoral wells, 2 borehole-based drinking water supply systems, and 2 drinking water supply systems from water intakes along the Senegal River; 2.2.2 Install 6 water harvesting ponds for pastoral needs
2.3 Protecting sustainably rural water infrastructures and activities	2.3.1 Promote good practices deemed resilient and favorable for the replenishment of underground water tables around hydraulic structures, including WSC/SPR[21]; revitalization of the vegetation cover; construction of 600 ml of filtering dykes in the relevant watersheds sites; 200 ml of gabions; 20 ha of bunds; and 500 ml of filtering dykes in the lowlands; and 2.3.2 Promote greening cover mechanisms protecting rural water infrastructure (surface area of 46 ha).
2.4 Supervision and close control of resilience activities & the development of water harvesting ponds	2.4.1. Control localization and execution of drilling water infrastructures 2.4.2. Supervise WSC/SRS works that involve beneficiaries participation
Component 3: Diversification and reinforcement of livelihoods and sources of income for rural and agro pastoral populations **Outcome 3:** *Rural and agro pastoral population's livelihoods and sources of income are diversified and reinforced*	
Outputs	Activities
3.1. Restoring natural resources of agro-sylvo-pastoral target zones as to improve rural populations' revenues	3.1.1 : Design and implement participatory resilient income-generating activities for women: (i) vegetable gardening, (ii) crafting (weaving, basketwork); 3.1.2 : Promote agroforestry and non-timber products manufacturing as to diversify sources of income for vulnerable rural populations including women

[19] *Namely: Hodh Echarghi, Hodh El Gharbi, Guidimaka, Tagant, Gorgol and Trarza (Assaba and Brakna supported by EU/AMCC)*
[20] *Namely: Hodh Echarghi, Hodh El Gharbi, Guidimaka, Tagant, Gorgol and Trarza (Assaba and Brakna supported by EU/AMCC)*
[21] *Water and Soil Conservation/Soil Protection and Restoration*

	3.1.3 : Restore forestry and pastoral resources in and around pilot wetlands as to improve ecosystems services to rural population
3.2. Introducing good practices of natural resources protection and management in pastoral and forest areas and sites as to improve their productivity	3.2.1 : Combat sand-dune encroachment that threatens target pastoral, forestry and agricultural resources, areas and infrastructures 3.2.2 : Develop a special program for 4 classified forests that includes management plans and restoration/densification of accacia nilotica trees 3.2.3 : Promote *El Athef* as a biosphere reserve 3.3.4 : Establish hedgerows of fire tolerant species (leptadenia pyrotechnica) as to limit bushfires through firebreaks in the rangelands
3.3. Diversifying and reinforcing rural women and population's sources of livelihoods through adoption of CCA technologies	3.3.1 : Introduce solar cooker and improved stoves in forests surrounding villages as a fuel wood alternative source to tree cutting 3.3.2 : Strengthening a long term programme of carbonization of typha as a substitute for charcoal and an upscaling activity around classified forests and listed rangelands
Component 4: Knowledge Management and Sharing, Communication, Monitoring and Evaluation ***Outcome 1 :*** *Knowledge management and sharing are evaluated, monitored and disseminated*	
Outputs	Activities
4.1 : Developing and disseminating knowledge and management best practices of adaptation to climate change as a mechanism benefiting all stakeholders	4.1.1. Undertake an inventory of local knowledge on adaptation including resilient measures and technical standards introduced by practitioners and other initiatives 4.1.2. Distribute booklets containing lessons learned and best practices inventoried on adaptation to climate change 4.1.3. Organize exchanges amongst farmers and/or an intercommunity learning process (between projects sites, open house days, inter-region visits, and international visits) to spread best practices and lessons learned 4.1.4. Develop a Communications Plan for the project including partnership agreements with existing rural radios and other innovative gender-oriented mechanisms (*Farmers Field Schools –FFS; Diversity Field Fora – DFF; and agro pastoral Field Schools - APFS)*
4.2 : Monitoring and evaluating (M&E) project activities	4.2.1 Develop a base-zero situation particularly for pilot sites 4.2.2 Develop a M&E manual and conduct annual M&E surveys 4.2.3 Ensure monthly Project Supervision 4.2.4 Ensure a Mid-term and final evaluations

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).

Review Criteria	Questions	Secretariat Comment at PIF (PFD)/Work Program Inclusion[1]	Section in the document
	7. Is the project aligned with the focal / multifocal areas/ LDCF / SCCF / NPIF results framework?	NOT CLEAR. Please refer to Section 8 below.	
Project Consistency	8. Are the relevant GEF 5 focal / multifocal areas / LDCF/SCCF/NPIF objectives identified?	NOT CLEAR. The Focal Area Strategy Framework (Table A) seems to conflate project-level outcomes and outputs with focal area outcomes and outputs. In addition, Table A does not include CCA Outcome 1.2, even though a key contribution of the proposed project would be to strengthen vulnerable physical and natural assets. Finally, while Section A.2 indicates that CCA-3 has been included, it is not found in Table A. RECOMMENDED ACTION: Please ensure that (i) Table A is consistent with the LDCF/SCCF results-based management framework and Adaptation Monitoring and Assessment Tool (AMAT), including the wording of outcomes and outputs; (ii) please ensure that the table	This has been addressed in Table A page 1 and in Section A.1.1 page 4

		includes all focal area objectives, outcomes and outputs towards which the proposed project is expected to contribute. If the project's alignment has changed from the approved PIF, please describe and justify changes in Section A.2.	
	10. Does the proposal clearly articulate how the capacities developed, if any, will contribute to the sustainability of project outcomes?	YES. The key elements of the project's sustainability strategy remain sound and clearly described in the Request for CEO Endorsement.	Section B 2 in page 15 to 19
	12. Has the cost-effectiveness been sufficiently demonstrated, including the cost-effectiveness of the project design approach as compared to alternative approaches to achieve	NOT CLEAR. Please refer to Section 15 below. RECOMMENDED ACTION: Upon addressing the recommendations under Section 15, please revisit Section B.3 of the Request for CEO Endorsement and provide further evidence of cost-effectiveness, as needed.	Further evidence of cost-effectiveness has been integrated in B.3 on page 19 and 20
Project Design	13. Are the activities that will be financed using GEF/LDCF/SCCF funding based on incremental / additional reasoning?	YES. The Request for CEO Endorsement provides a clear description of the proposed, LDCF financed adaptation measures and the associated additional reasoning. Please refer to Section 29 below, however.	Additional cost reasoning explained in section A.5 and project components are elaborated in Sections A.4 and Annex E
	14. Is the project framework sound and sufficiently clear?	YES. The project framework is sound and sufficiently clear.	See Project Results Framework in Annex A
	15. Are the applied methodology and assumptions for the description of the incremental/additional benefits sound and appropriate?	NOT CLEAR. The project results framework (Annex A) could further specify a number of key adaptation outcomes. Under Result 1.2, the results framework could indicate the number of people that the project aims to train, disaggregated by gender, and indicate what institutions would benefit from such training. As for Result 3, the results framework does not specify a target for "the number of households that will improve their revenues from protection and regeneration of pastoral and forest activities". Finally, for the share of the targeted rural population that adopt adaptation technologies, the results framework could also provide an absolute number of people targeted. RECOMMENDED ACTION: Please clarify and specify baselines and targets for key adaptation outcomes and revise the project results framework as well as the Adaptation Monitoring and Assessment Tool	Further key adaptation outcomes and more indicators indicating baselines and targets have been specified in the project results framework (Annex A) and AMAT

		(AMAT) accordingly, as needed	
	16. Is there a clear description of: a) the socio-economic benefits, including gender dimensions, to be delivered by the project, and b) how will the delivery of such benefits support the achievement of incremental / additional benefits?	NOT CLEAR. Please refer to Section 15 above. The Request for CEO Endorsement could also clarify how gender dimensions have been considered throughout the project design, in addition to mentioning specific activities that are expected to benefit women in particular. RECOMMENDED ACTION: Upon addressing the recommendations in Section 15, please (i) review and further clarify the expected socioeconomic benefits in Section B.2 of the Request for CEO Endorsement; and (ii) provide a more complete description of how gender dimensions have been considered throughout the project design.	Additional clarification and a more complete description of how gender dimensions have been considered in the project design are provided in section B.2 page 15 to 19
	17. Is public participation, including CSOs and indigenous people, taken into consideration, their role identified and addressed properly?	YES. Public participation, including the role of civil society, is adequately described in the Request for CEO Endorsement	List of stakeholders engaged listed in section B1
	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)	YES. Principal risks and appropriate, associated mitigation measures have been adequately described in the Request for CEO Endorsement	Risks and associated mitigation strategy discussed in A.6
Project Financing	23. Is funding level for project management cost appropriate?	YES. No change from PIF.	PMC cost set at $300,000 (4.7% of total project component)
	24. Is the funding and co-financing per objective appropriate and adequate to achieve the expected outcomes and outputs?	YES. The proposed grant and co-financing amounts per component seem adequate and appropriate	The Government of Mauritania and the AfDB will provide co-financing as per Table C
	25. At PIF: comment on the indicated co-financing; At CEO endorsement: indicate if confirmed co-financing is provided.	YES. Appropriate confirmation of co-financing is provided with the Request for CEO Endorsement.	Co-financing is confirmed by both, the Government and AfDB as to the level set in Table C
	26. Is the co-financing amount that the Agency is bringing to the project in	YES. No change from PIF.	

	line with its role?		
Project Monitoring and Evaluation	27. Have the appropriate Tracking Tools been included with information for all relevant indicators, as applicable?	NOT CLEAR. Please refer to sections 8 and 15 above. RECOMMENDED ACTION: Upon addressing the recommendations under sections 8 and 15, please ensure that the Adaptation Monitoring and Assessment Tool (AMAT) provides baselines and targets for all relevant indicators consistent with the Focal Area Strategy Framework (Table A), and the project results framework (Annex A)	A separate attachment provides the Tracking Tools table with baselines and targets for all relevant indicators consistent with Table A and Annex A
	28. Does the proposal include a budgeted M&E Plan that monitors and measures results with indicators and targets?	Yes	Table 2 on page 19 and Annex A on page 21 provide indicators, targets and a budgeted M&E plan
Agency Responses	29. Has the Agency responded adequately to comments from: ☐ STAP? ☐ Convention Secretariat? ☐ Council comments? ☐ Other GEF Agencies?	 Yes Yes NO. RECOMMENDED ACTION: Please provide, in Annex B of the Request for CEO Endorsement, a response to Council comments at PIF and ensure that such responses are consistently reflected in relevant sections of the request. Yes	

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[22]

- A. provide detailed funding amount of the ppg activities financing status in the table below: ***PPG not yet completed***.

PPG Grant Approved at PIF:			
Project Preparation Activities Implemented	***GEF/LDCF/SCCF/NPIF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
Total			

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)

[22] *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.*

APPENDIX : GRAPH 1: ADDITIONALITY OF REVUWI TO PNISER

Graph 1: Process of building additionality over PNISER

Identified climate change related risks to baseline intervention	▪ Reduced and more irregular water availability ▪ Increased risks for threat on water infrastructures and activities destined to pastoral and forest resources ▪ Increase of evapotranspiration due to heat wave leading to decrease of water table and in water supply	▪ Climate change ignored by sector planners ▪ Nomads and communities unaware of climate change impacts ▪ Climate information not factored into water investment decisions	▪ Increased soil degradation ▪ Reduced capacity of Rangeland Grazing ▪ Decreased forest non-timber products	▪ Manpower migrates to urban cities emptying the farming community of its male workforce ▪ Productivity of production systems in steep decline ▪ Overpressure on wetlands ecosystems services	▪ Climate change risks to development objectives: ▪ Reduced livelihood to decrease food insecurity trend ▪ Increased vulnerability risks of socioeconomic sectors (animal husbandry and forestry) ▪ Reduced resilience of the wetlands environmental services resulting in mid to long-term lower productivity
Baseline	▪ Supplying drinking ▪ Provide more water infrastructure and activities to meet the demand	▪ Promoting access to resources inventory	▪ Promoting diversification of activities and income generation	▪ Strengthening institutional support	▪ promoting innovative devices to supply water where needed
LDCF Additionality	▪ Strengthening capacity of vulnerable nomad herders on best management practices in a changing climate ▪ Rendering grassland more resilient to climate change ▪ Promoting sustainable and efficient water use ▪ Promoting resilience at landscape level	▪ Investing in climate resilient infrastructures at sites impacted by floods and erosion ▪ Forming processors aware of climate change ▪ Training stakeholders on resilient innovative natural resources management techniques	▪ Promoting small scale irrigation for market gardening ▪ Selecting transhumance routing that is less damaging of scarce resources ▪ Scaling-up non timber products as an adaptation measure	▪ Promoting monitoring water regimes to input a database ▪ Improving data and knowledge on climate change impacts ▪ Raising awareness on climate change at the institutional level ▪ Addressing climate change from planning perspective	▪ Expected development objectives: ▪ Mitigating the impact of climate change on pastoral and forest resources ▪ Unlocking climate change-related bottlenecks to access to animal husbandry

ANNEX E

FURTHER DETAILED OF SECTION A 5:

Component 1: **Strengthening institutional and local capacities for sustainable management of resilient natural resources**

In order to meet the needs of new appropriate knowledge and amenities of climate change facilitating the acquisition and consolidation of past achievements and ongoing scientific information on natural resources sustainable management (NRSM), this component will focus gradually on strengthening the capacities of the central and decentralized MEDD and MHA structures, as well as local authorities, beneficiary communities and the civil society. Particular effort will be made at the regional level to strengthen capacities of the regional services to address the lack of knowledge and resilient facilities in the area of climate change. The component consists of two sub-components:

Sub-Component 1: Public services, local and community organizations integrate climate risks into policies and strategies for sustainable natural resource management

Public services at different levels, local authorities and community organizations apply a climate lens to their strategies and policies for sustainable natural resource management based on the "climate proofing for development" approach. This sub-component aims to improve natural resource management to make them resilient by integrating the climate change dimension into all planning mechanisms at national, regional and local levels. Integrating the climate change dimension into communal development plans will be of particular interest since such integration represents a solution for sustainability of project outputs. Activities of the sub-component are as follows:

- *Activity 1.1.1: Integrating climate risks into strategies for sustainable development and management of water, pastoral and forest resources*

  In Mauritania, the climate change dimension is included in the Poverty Reduction Strategy Paper (PRSP) Action Plan and in the National Environment Action Plan (PANE2), which is an important step forward. However, this vision will become irrelevant if the same measures are not taken in the

rural and water sector policy, as well as the communal development plans in the target areas. The aim of this activity is to ensure consistency with the PRSP, which is the overall reference framework for the country development policy, as well as to ensure sustainability of project achievements given that the climate change dimension will be considered at all levels – national, regional and local. The initial focus will be to raise awareness among all policy makers and central government officials to enable them gain a better understanding of the climate change issue and its impact on the country's natural resources and economy, and equip to introduce the climate change dimension in their planning. This activity involves the following:

- *Integrating climate change dimension into sector policies*: In Mauritania, the PRSP has integrated climate change dimension; and as such, this represents significant steps towards mainstreaming climate change. The integration proposed in the REVUWI project covers only three sectors policies (environment, water and sanitation and rural development). For the environment sector, it will involve revisiting the National Sustainable Development Strategy (SNDD) and harmonize it with the second action plan (PANE 2) that has already integrated climate change. For the other sectors (rural development, water and sanitation), it will involve a new approach that will require raising awareness of these Ministries with the objective of the mainstreaming stimulation of climate change. Studies outcomes on the vulnerability of these two sectors conducted as part of the Third National Communication (2014) will be used as supporting material for raising awareness. This activity will be entrusted to an NGO or a consulting firm. Its implementation will require the preparation of detailed and targeted terms of reference.
- *Promoting and strengthening communal development plans (CDPs) in climate change (CC)*: In Mauritania, there are 218 communes, the majority of which do not have a Communal Development Plan (CDP). Approximately 100 communes out of 218 have CDPs most of which have become obsolete as they date back to the early 2000s. Most of the 100 CDPs were prepared with external support depending on their usefulness for the Project to be developed while ignoring CC.

- *Activity 1.1.2: Promoting, through awareness-raising, good practices for participatory management of resilient natural resources.* This activity involves the following:

- *Raising awareness on climate change*: To better draw the attention of all stakeholders to the impact of climate change on natural resources and enable them to assume ownership of project activities, it is necessary to provide them with all the information needed to enhance their knowledge of climate change phenomena and its impact on local resources and the economy. Indeed, a better understanding of the adverse effects of climate change will facilitate behaviour change and encourage the society to support measures for adaptation and reducing the vulnerability of people. Raising public awareness will thus help professionals in the vulnerable sectors to take a lead role in developing rapid and comprehensive adaptation strategies that will reduce the vulnerability of people. Such awareness-raising will also facilitate the integration of climate change dimension into all development projects and programmes. Implementation of this activity will be entrusted to an NGO, which will be selected on a competitive basis.
- *Raising awareness on Ecosystem-based Adaptation approach (EbA) in wetlands:* The EbA approach is a holistic adaptation based on the ecosystem approach. It deliberately uses "green infrastructure" and ecosystem services to build the resilience of human communities to climate change. EbA is thus an anthropocentric approach that focuses on how ecosystems can help populations adapt to current climate variability and future climate change, the objective still being to reduce people's vulnerability to climate change. EbA includes measures to conserve, restore and sustainably manage ecosystems and natural resources, as well as complement (or even replace) other sector adaptation measures, such as measures to promote physical or "grey" infrastructure. In addition, natural ecosystem-based solutions tend to generate valuable concomitant benefits such as carbon sequestration, biodiversity conservation or food production, and are often more effective. This approach can be applied to wetlands, which have multiple functions. "Wetlands and their ecosystem services are extremely valuable for all peoples of the world": This is one of the major conclusions of the Ramsar Scientific and Technical Review Panel (STRP) drawn from the Millennium Ecosystem Assessment (MEA). Indeed, wetlands are not only at the core of biodiversity, but they also provide many ecosystem services to society by contributing to

maintaining and improving water quality, regulating hydrologic regimes or even regulating the local and global climate. These environments are also a medium for socially and economically important tourist or leisure activities. According to the 2007 IPCC report, wetlands are among the ecosystems that are most vulnerable to climate change as the degradation and loss of these environments occur faster than that of any other ecosystem. Depending on the different climatic scenarios, they could be affected by changes in rainfall patterns, droughts, storms and more frequent or intense floods. The purpose of raising awareness is to draw the attention of policy makers to the ecological and biological importance of these environments and their vulnerability to climate change. The ultimate goal is to build the resilience of the people and livestock living around these wetlands. This activity also supports measures taken by other programmes for the utilization of wetland waters without losing sight of the vulnerability of these environments to climate change. Awareness of the sustainable management of wetlands will be raised through organizing five workshops, with one workshop at central level and four at regional level .Implementation of this activity will be assigned to a consultant, who will be selected on a competitive basis.

- *Promoting the development and use of guidelines on adaptation to climate change for sustainable management of wetlands:* The purpose of this activity is to synthesize the many tools and relevant approaches to climate change adaptation and biodiversity management used in the EbA approach. The EbA approach can be used in various vulnerable areas or sectors. Experiences in potential EbA measures include management, conservation and improved restoration of:

– forests, wetlands and organic soils so that they play their regulatory role within the hydrologic regime, against a backdrop of water scarcity caused by reduced rainfall and longer spells of drought;
– pastures, forests and grasslands that protect communities from increased soil erosion resulting from higher rainfall;

- The guidelines will specify how the EbA approach can be applied in wetlands, in particular, and in other vulnerable resources areas covered by the Project (water points, forests and pastoral resources areas), in general. These guidelines will be distributed at the various awareness-raising workshops in the form of brochures and reading materials. They must be given primarily to Government technical services, regional administrative authorities, and communes. This activity will be combined with the case studies planned under sub-component 2, and their implementation will be entrusted to a Consultant.

Sub-Component 2: Promotion of training and raising awareness of climate adaptation techniques through soil and water conservation and integrated forest and pastureland management

This sub-component is intended to provide support at national, regional and local levels so that the actors can better perform their core functions of supporting and promoting good practices. This will include improving their knowledge to enable them to better perform their specific role in the local management of natural resources resilience. Sustainability of project outputs will be ensured through human resource training and preparation of the rollout of methodological advances and practices throughout the project area. More specific training will be provided. These sessions will be organized to draw lessons from successful solutions. For more effective monitoring of project impact as regards to mitigate the effects of climate change on the population and resilient natural resources, water resource and ecological monitoring equipment will be made available to all stakeholders at all levels (national, regional and local). Activities under this sub-component include:

- *Activity 1.2.1: Introducing training on water use systems adapted to resilient herding methods*

- *Payment for environment services.* Mauritania is a pastoral country. Pastoralists and their animals, in all circumstances, except for temporary limitation, have freedom of access to pastoral resources in areas other than those assigned temporarily or permanently for exclusive use, to third parties, in accordance with applicable laws and regulations (Article 11 of the Pastoral Code). Although this freedom guarantees the access **to** livestock resources, it puts a high pressure on them **while** increasing their vulnerability to the effects of climate change. At the social level, it is a source of conflict between herders and farmers, and between herders and associations responsible for natural resources management. Section 11 of Law No. 2007-055 of 18 September 2007 on the Forest Code stipulates that “exploitation rights on national forests and forest lands belong to the State. Outside

State classified forest estate areas, the exercise of such rights may be transferred for a specified period to local communities that may, based on a local agreement, delegate the responsibility to individuals, in particular associations managing natural resources whom, as a result, shall receive all or part of the income generated from such exercised rights." These provisions offer the opportunity to establish a *Payment for Environmental Services* (PES) mechanism, which is relatively new and which aims to promote positive environmental externalities through the transfer of financial resources between the beneficiaries of certain environmental services and service providers who are managing environmental resources. The underlying principle of the PES is: resource users and communities that provide environmental services should be compensated, and those who benefit from such services must pay. Thus, these benefits are internalized (see also component 3). Training of pastoralists, including nomads, on management of water activities and infrastructures and on pastoral resources resilience, under this sub-component, will include an awareness-raising on *payment for an environment service* (PES) mechanism (see annex H). This will help to resolve conflicts between various resources users and enhance the resilience capacity of the natural resources in question, as the delegation of management is based on a development and management plan that takes into account the productivity of the pastureland. This activity also includes another training that will be focusing on monitoring water resources, among which those of wetlands. The training will involve regional leaders and people living around the water infrastructure. The aim is to help them to better assess the state of water resources in each area and take appropriate adaptation measures, if necessary. The accompanying proposed actions for this activity are:

- *Training in vulnerability of water, pastoralism and forestry sectors*: This action aims to organize training and awareness-raising workshops on the vulnerability of water, pastoralism and forestry sectors. It is intended to help target groups and stakeholders get a better grasp of the vulnerability of these sectors and to take appropriate adaptation measures. Assessments of these sectors under the Third National Communication (2014) will serve as tools for raising awareness. These three sectors, which support the rural economy, are particularly vulnerable to climate change. An analysis of their vulnerability at a training workshop would undoubtedly enhance the resilience capacity of the target groups. A total of five training workshops will be organized, with one at the central level and the others at the regional level, based on regional bundling. This training will also support and/or complement water infrastructure reinforcement activities and those actions addressing land degradation under components 2 and 3. The training will be provided by a Consultant under the supervision of the Coordination Unit of the National Climate Change Programme.
- *SLM*[23] *Training*: Land is the medium for all production systems in rural areas, but it remains highly vulnerable to climate change with effects on water and wind erosion. This erosion hazard destroys soil texture and structure, and reduces fertility, thereby leading in turn to a decline in the land productivity. The SLM training will focus on WSC and SPR to support the implementation of these techniques at the target sites; it aims to serve simultaneously several purposes: (i) improved water management, (ii) increased productivity of agricultural, forest and pastoral land, and (iii) sustainable environmental, social and economic management. For the beneficiaries, the objectives are multiform: (i) to improve food security through secured, increased and diversified production, allowing them to improve their living conditions; (ii) At the social level, to improve the organization and capacity of the rural population, as well as to promote the rational use of natural resources while preventing conflicts; (iii) to contribute to increasing groundwater levels and facilitating access to water by the population and their livestock; (iv) at the environmental level, to improve protecting the land against erosion, increasing fertility, and preserving biodiversity; (v) to stabilize the livelihoods of the population, reduce their vulnerability to climate change, and thereby help to build their resilience; (vi) it complements the measures for the restoration and protection of degraded lands under component 3. The training will be conducted by a consulting firm or NGO with solid expertise in this field, and will focus on gender aspects. The same will apply to all other training proposed under this component. A total of five training workshops will be organized, with one at the central level and four at the regional level, based on regional bundling.

[23] *SLM (Sustainable Land Management); WSC/SPR (Water and Soil Conservation/Soil Protection and Restoration); CNRE (National Centre for Water Resources)*

- *Training of DRHAs in monitoring water regimes*: The diagnosis of the DRHAs and of the very rudimentary water resource documentation methods used reveal very significant deficiencies in the monitoring of water regime, including the quantitative and qualitative measurement, processing and analysis of all data related to water regime. This training is aimed at monitoring water regime. It also involves providing support for case studies that will be conducted for the target wetlands to allow better understanding of the hydrological functioning while providing appropriate solutions to their CC vulnerability. This training will be provided by a consultant or consulting firm under the supervision of CNRE.
- *Training of the communities in monitoring water regimes*: This training complements that of the DRHAs, who will have the task of training the communities living around the target wetlands where the measurement equipment will be installed. Training the communities aims to reduce the costs of hydrological data collection while sustaining project achievements though communities' involvement from the project start up.
- *IEC training in management of water infrastructure and pastoral resources*: The management of water infrastructure is currently a priority for the State and development support programmes, which devote significant resources to their implementation. Water infrastructure requires more effective management to ensure sustainability. In practice, water infrastructure maintenance and management are recurrent issues and a challenge, given the rapid deterioration of infrastructure. Rural populations, particularly transhumant herders, are faced with a dual problem given their limited resources, namely: (i) mobilizing enough resources to meet investment needs; and (ii) ensuring that the infrastructure is maintained and managed efficiently and sustainably. Training on management of water infrastructure therefore aims to support the creation of water point users' associations. Project support will lead a programme of awareness-raising and explanation to the people to enable them to assume responsibility for the maintenance of hydraulic facilities in their organization at the local level. This training will incorporate the dimension of sustainable management of pastoral resources by drawing up the zoning of pastoral areas to determine where wells are to be drilled. A total of four training/awareness-raising sessions will be conducted. The awareness-raising activities will also cover the development of PES schemes that seek to provide income to associations responsible for managing natural resources, limiting conflicts between users, and ensuring sustainable natural resource productivity. Without PES, the resources could be used either as an open and unprotected source of grazing on one side; or be used intensively like grass-cutting by neighbouring communities on the other side. While with PES, the managers have incentives to maintain viability of ecological services. The introduction of a PES mechanism will be popularized at the exclosure[24] sites and other sites for natural resource restoration proposed under component 3. The awareness-raising and training will be conducted by a consulting firm, a consultant or an NGO.
- *Characterization of wetlands:* In Mauritania, wetlands have environmental flora, hydrological, climatic and anthropogenic features that make them fragile, sensitive ecosystems, and at-risk. They constitute a natural heritage of great value by virtue of their multiple biological, ecological and economic functions. Unfortunately, these wetlands are threatened and heavily degraded due to overexploitation of the natural resources they contain. Their characteristics remain largely unknown. This explains the focus on their characterization (hydrological functioning, ecological and biological value, socio-economic value, etc.) and protection. These environments are nowadays naturally exposed to adverse weather conditions (wind and sunlight) which gradually reduce their potential through evapotranspiration. Siltation is another threat because of recurrent erosion (wind and water) and sand encroachment. A national wetlands conservation strategy is being validated. The Ministry of Rural Development has a programme for the development of these wetlands based on the harnessing of their waters for vegetable production to reduce poverty. The idea underpinning the MEDD guidelines is to support this programme in order to preserve sustainably and the integrity of the wetlands and their ecological, biological and socio-economic value, while boosting the resilience capacity of the population living in their vicinity. Given the large size of these areas (number and spatial distribution), the characterization will involve only the five major sites to be

[24] *Definition of exclosure: an area from which unwanted animals are excluded*

selected on the basis of their exposure to threats, in particular the development of unsustainable agricultural activities. Implementation of this activity will be entrusted to NGOs recruited at regional level.

- *Wetland pilot sites:* This activity aims to support several activities proposed under components 1, 2 and 3. Component 1 will test the EbA approach and implement the guidelines for sustainable wetlands management. Component 2 will involve the installation of equipment for measuring the water regime. The DRHAs and the local population will be respectively equipped and trained in measuring water regime. This activity will cover only the five wetlands to be characterized (Mahmouda, Vedra, Kankossa, Tamourt En Naaj and Rkiz). WSC/SPR measures could also be developed as part of the activities proposed under component 3 along with IGAs. The budget allocations earmarked for this activity will be used to draw up simplified development plans for the five pilot wetlands, and to implement some of the activities of these management plans. This activity will involve several actors (MEDD and MHA Technical Services, local communities and NGOs), and its implementation will be entrusted to a consultant.

▪ *Activity 1.2.2: Providing the target groups with training in climate change for a resilient conservation and integrated management of pastoral and forest resources*

- This activity will be implemented as follows:
- *GIS training for MEDD and MHA regional officials:* The regional officials, in need of a recorded database, collect a lot of field data on bush fires, grazing lands, forests, rainfall, surface water, ground water, wetlands, etc… that are not geo-referenced. The training is expected to equip them with a tool to aid decision-making. It will be conducted in the Wilayas. A total of four training sessions on GIS will be held and another four on environmental monitoring. The training sessions will be organized following the same approach as for the wetlands.
- *Training in environmental monitoring:* Over the past few decades, some recurring effects of drought and desertification have reached alarming and insidious proportions for pastoral and forest resources in Mauritania. Unfortunately, the very fast changing trends of these forms of environmental degradation are not well known. In response, this calls for continuous reflection and prudent actions on the exploitation of natural resources, as well as appropriate measures for instituting permanent impact monitoring and collection of data on the forms of degradation these resources may have. In this regard, the information collected during the field mission revealed that the DREDD technical reports on the state of natural resources were generally based on visual observation, and were not scientifically and technically rigorous. The goal of this training is to equip DREDD with tools that will allow them to collect all the ecological and biological data for assessing changes in ecosystems and the impact of human activities on them.
- *Raising awareness on hygiene and sanitation:* Rural areas in Mauritania are experiencing critical sanitation conditions, with only 21% of overall access to individual facilities. The PAEPA and PNISER projects have both developed the Community-Led Total Sanitation (CLTS) approach in six of the eight Wilayas covered by the REVUWI Project, with the exception of Guidimakha and Trarza Wilayas. The objective of this activity is to cover the entire REVUWI Project area so as to improve access to individual sanitation in the last two Wilayas, which have so far not benefited from the support of the PAEPA and PNISER projects. It will involve raising awareness for approximately 2000 households to stop open defecation in the target areas. As with the PAEPA and PNISER projects, this activity will be accompanied by a subsidy for poor households. Raising the awareness of households using the CLTS approach will be entrusted to NGOs with extensive field experience.

Component 2: Reducing vulnerability to climate change of rural water infrastructure and activities

The component aims to reduce the vulnerability of rural water infrastructure and activities to climate change, as well as improve the reliability of water management so as to increase access to water and enhance the management and development of agro-sylvo-pastoral resources. It will consist of the following sub-components:

Sub-component 2.1: Sustainable management of wetland natural resources: The aim of the sub-component is to improve the sustainable management of natural resources of wetlands and optimize its reliability. This will be done through the following two activities:

- *Activity 2.1.1: Strengthening of systems for monitoring and restoring water resources and ecological services in pilot wetlands.* To that end, the Project will construct 6 retention basins, 20 pastoral boreholes, 2 drinking water supply systems from the boreholes and 2 other water supply systems from intakes in River Senegal. It is important to note that boreholes were preferred to pastoral wells owing to constraints related to the scarcity of contractors on the local market for that type of work. In addition, the proposed boreholes will be equipped with solar pumps only so as to reduce operating costs and ensure easy maintenance;
- *Activity 2.1.2: Additional mobilization of water resources through application of best practices in pilot wetlands.* To obtain reliable data to assess the different practices, these wetlands will be equipped with 85 rain gauges and will be subject to topographical studies for the production of 1:20,000 scale maps, as well as hydro-geological, hydrological, improvement and analytical studies for creating management scenarios. Five wetlands will be covered in these studies.

Sub-component 2.2: Protection of rural water infrastructure and activities. This sub-component, which aims to further build the resilience of rural water infrastructure and activities in the initial PNISER areas and the southern bordering areas, will involve the use of technologies for water and soil conservation (WSC/SPR) and harnessing of runoff water for better recharge of groundwater. The sub-component will include the following two activities:

- *Activity 2.2.1: Rural water infrastructure and activities are sustainably protected* through developing WSC/SPR improvement techniques and structures, now widespread in the sub-region and deemed resilient, while promoting the reduction of water erosion and recharge of underground water tables around hydraulic structures. The primary purpose of these structures is to stabilize the environments through revitalization of the plant cover. This activity will require the construction of 600 ml of filtering dykes, 200 ml of gabion thresholds, 20 ha of stone barriers, and 500 ml of filtering dykes on lowlands;
- *Activity 2.2.2: Promoting the re-vegetation of rural water infrastructure protection structures.* Reforestation with local species (*leptadenia*, acacias, etc.) upstream of the water infrastructure to be developed by the Project to ensure sustainability of the services delivered and to meet the water needs of the rural population and livestock. The re-vegetation of 46 ha is envisaged.
- *Activity 2.2.3:* Supervision and close control of resilience activities in five Wilayas, including water supply works (drilling, DWS systems[25]) and the development of water harvesting ponds.

Component 3: Diversification and improvement of the livelihoods and sources of income of the rural and agro-pastoral population

The measures listed under Component 3 will involve combatting sand encroachment and environmental degradation in vital project areas through the mechanical and biological fixation of mobile dunes in exposed areas (575 Ha). Stands of *Prosopis juliflora*, a fast-growing species adapted to local conditions and the arid climate will be established. There is local experience from previous projects such as PLEMVASP, with the Nouakchott Green Belt, and excellent national expertise with a sound track record in the sub-region. Obviously, the proposed measures will be consistent with the planned course line for the Great Green Wall (GGW), in its capacity as a sub-regional programme under the African Union's NEPAD initiative. Furthermore, pastoral and forest resource restoration activities will be developed in a participatory manner (640 Ha) to protect goods and services of the ecosystems for the target communities, and thus contribute to poverty reduction. These activities form the basis for sustainable natural resource development, in line with sub-component 3.2. Similarly, 215 ha of Gum Arabic trees (*Acacia Senegal*) will be rehabilitated, and measures for their sustainable exploitation implemented. Lastly, a biosphere reserve will be created in the El Athef area of Gorgol Wilaya. This pastoral and forest reserve covers an area of about 5850 ha, and has been experiencing a critical rate of degradation from recurrent drought in the 1970s, as well as from anthropogenic pressure through unsustainable human practices (livestock pressure, tree felling, uncontrolled management of groundwater resources, settling of people within the

[25] *Drinking Water Supply*

ecosystem, etc.). This is a particularly sensitive activity as the area is one of the last safe havens for much of the national herd during the recurrent episodes of drought and scarcity of pastoral resources. At the same time, 9 400 units of improved stoves and solar cookers will be introduced in the areas surrounding the forests to be restored and the wetlands so as to reduce fuel wood consumption. The aforementioned protection and restoration activities will be accompanied by IGA[26] to ensure diversified and improved incomes for the neighbouring communities of the target ecosystems. These measures to facilitate adaption to climate change impacts will also serve as levers and incentives for mobilizing local actors to participate in carrying out community works for natural resource management. In this regard, market gardening (60 ha), fruit tree cultivation (41 ha) at the family level (three trees per family), and the sustainable exploitation of non-timber forest products will be supported. Particular focus will be placed on women, youths and marginalized groups to improve the living conditions of the beneficiary communities. The sub-components and activities are as follows:

Sub-component 3.1: Agro-sylvo-pastoral resources in the target areas are restored and their rural infrastructure protected

- *Activity 3.1.1: Controlling sand encroachment in pastoral, forest and agricultural areas and on exposed infrastructure (575 Ha).*
- *Activity 3.1.2: Restoring forest and pastoral resources including those of wetlands (855 ha including 215 ha for rehabilitation of Acacia Senegal gum trees)*
- *Activity 3.1.3: Promoting the creation of a biosphere reserve in El Athef area*
- *Activity 3.1.4: Promoting alternative energy saving devices to fuel wood.*

Sand dune fixation techniques (promoted under activity 3.1.1) will be used through mechanical and biological means. Mechanical stabilization, an indispensable prerequisite for fixation of mobile dunes, consists of constructing fences of inert plant material or synthetic material on the mobile sand surfaces in order to temporarily halt the movement of sand, and thereby protect seedlings from being buried or uprooted. Biological fixation, which follows mechanical stabilization, involves planting nursery plants or cuttings on the stabilized surface. The species most commonly used in Mauritania are: *Prosopis juliflora*, *Leptadenia pyrotechnica*, *Panicum turgidum*, etc. Temporary nurseries will be located near the planting sites. Provision will be made for a 1.5 ha nursery for a stand of 575 ha, based on a spacing of 5x5 m and a diameter of 15 cm for containers.

Measures for creation of stands and maintenance
- *Creation of nurseries.*
- *Establishment of Zero State (situation prior to intervention): recovery rate, density, species, etc.*
- *Wattle-fencing of planting sites.*
- *Planting at the beginning of the rainy season.*
- *Monitoring and refilling*
- *Caretaking*

The grazing prohibition techniques (promoted by Activity 3.1.2) using mesh fences are intended for in situ conservation and vegetation rehabilitation. The restored areas, based on participatory community management, will eventually constitute a reserve for fodder during the dry season and for the exploitation of forest products. Grazing prohibition mitigates fodder shortages in the dry season and prevents soil degradation by reducing soil erosion and deforestation. These reserves offer a wide range of products, such as timber, fodder, firewood, medicinal plants, wild fruits, etc. They help to strengthen livelihoods, provide a crucial safety net during dry seasons and droughts, generate additional income for the beneficiary communities, and can help alleviate women's chores by reducing the time spent collecting firewood and have a very positive impact on biodiversity.

Measures for implementation:
- *Demarcation and enclosing of grazing sites with mesh fences.*
- *Establishment of Zero State (situation prior to intervention): recovery rate, density, species, etc.*
- *Prohibition of grazing for at least 5 years to ensure regeneration of vegetation (depending on the state of degradation of sites).*

[26] *IGA: Income-generating activities*

- *Creation of tree nurseries to produce seedlings of native species.*
- *Establishment of zaï or forest half-moon system (better use of rainfall)*
- *Enrichment planting.*
- *Monitoring and caretaking*
- *Organization of utilization, eventually.*

Introducing solar cookers and improved stoves in the villages surrounding the sylvo-pastoral areas (9400 units) is the activity with the objective to reduce pressure on the forests and woodlands, while improving the quality of life for people in the project area. Measures to be implemented will help: (i) reduce wood consumption; (ii) reduce the destruction of forests; (iii) increase the incomes of the poorest households; (iv) improve the health of the target communities (fewer cases of burns, respiratory and eye diseases) and free up time for women, and in particular, (v) reduce carbon monoxide emissions, and thus help mitigate global warming, and (vi) contribute to fighting unemployment. Local natural resource collective management associations (AGLC) will provide a framework for implementation and monitoring the introduction of interventions to ensure sustainability. Local agreements will be drawn up between the AGLC, which will manage project grants, and the craftsmen who will be trained to manufacture the improved stoves. Ultimately, the goal is to empower local craftsmen and secure working capital to be used by the beneficiary community for various investments in natural resource management or the diversification of livelihoods to cope with climate change. Training and activities to raise awareness of improved stoves will be developed upstream to ensure effectiveness of the actions undertaken. The budget for this activity covers the cost of training the craftsmen, organizing workshops to raise awareness of households, and demonstration sessions to introduce the improved stoves to households (see Annex 11).

Sub-component 3.2: The sources of income and livelihood of the rural population are diversified and strengthened

The aforementioned labour-intensive activities to protect and to restore natural resources will be backed by income-generating activities to compensate for the physical efforts made by the people, as well as for the diversification and improvement of their incomes, particularly those living near the target ecosystems. These measures to build the resilience of the communities to climate change impacts will be used as leverage for mobilizing local actors to participate in carrying out community works for managing their own natural resources. Small 60 ha irrigation areas will be supported near water points, particularly for women, youths and marginalized groups.

- *Activity 3.2.1: Promoting market gardening to diversify the sources of income of vulnerable rural populations (60 ha);*
- *Activity 3.2.3: Promoting women's agroforestry to contribute to diversification of the population's sources of income (41 Ha).*

As regards to the agroforestry, the Project will support the introduction of 41 ha of fruit trees (one family three trees), to diversify the sources of income of beneficiary populations based on the approach adopted for the previous activity.

Linkages with other related initiatives

Initiatives for managing natural, pastoral and forest resources are many and varied in the project area. The mission visited and held discussions with each of these ongoing initiatives to consider and assess the potential for synergy, and avoid duplication of the proposed adaptation activities. The Environmental and Sustainable Development Technical Group (DTEDD) consisting of Technical and Financial Partners (TFPs) on the environment in Mauritania, visited by the project preparation team and recommended: (i) the establishment, by MEDD, of a management framework to coordinate the tools and methods, define, if necessary, the areas of intervention, and facilitate the exchange of ideas and lessons learnt; and (ii) the preparation, by each initiative, of a comparative table of potential areas of synergy and duplication. To that end, Table 4 below shows that of REVUWI, where the potential areas of synergy and duplication are ticked against existing projects or a project for which funding is provided.

Table 4. Potential and Opportunities for Synergy and Linkages with on-going Initiatives

REVUWI Activities	PARSACC[27]	DSPAI	SCTRC	EPRSA	ProLPRAF	PDIM	P2RS
	Food Security	Bush Fires	Desertification Control	Food Security	Sector Support	land Reclamation	Resilience to food insecurity
• Restoration of pilot wetlands						✓	✓
• Building CC capacity of decentralized structures	✓	✓					✓
• Introduction of EbA and PES & NRM innovative tools			✓				✓
• Reducing human pressure on natural resources (forests, rangeland)		✓		✓			✓
• Promoting and developing WSC/SPR good practices for combatting erosion, SLM,	✓						✓
• Bush fire management		✓					✓
• Developing rural water infrastructure (DWS, retention basins)	✓	✓		✓			✓
• Grazing prohibition on pastoral areas and forests	✓	✓					✓
• Reforestation, fixation of sand dunes			✓				✓
• IGA & diversification of sources of livelihoods	✓				✓	✓	✓
• Support for CDPs	✓						
• Knowledge and resilient technologies	✓		✓	✓	✓	✓	✓
• Training and raising awareness of CC	✓		✓	✓	✓	✓	✓
• Sanitation	✓		✓	✓	✓	✓	

Component 4: Knowledge management & capitalization, communication & project M&E

The monitoring/evaluation system differentiates between three levels of outcomes: (i) the direct outcomes of project activities (first level); (ii) the outcomes of project activities (level 2); and (iii) overall impact of the intervention (level 3). Measuring the impact must include the following two indicators: (i) income generation by women; and (ii) number of beneficiary households. These impact indicators will be collected through baseline surveys initially, but also mid-term and upon project completion. Particular attention will be paid to the evaluation of reforested species, whose growth rate may exceed project duration (3 years). The component has two sub-components:

Sub-component 4.1 – Knowledge management and communication are undertaken locally:

- *Activity 4.1.1: Promoting proven local empirical knowledge;*
- *Activity 4.1.2: Introducing innovative approaches to NRM28 (EbA, climate-proofing, PES);*
- *Activity 4.1.3: Capitalizing on good practices and resilient lessons (preparation of technical references, organization of exchange visits);*
- *Activity 4.1.4: Communication (communication channels and mechanisms, political dialogue on Natural Resource Management in arid areas).*

Sub-component 4.2 – Project monitoring and evaluation activities are conducted in a timely manner:

- *Activity 4.2.1.: Preparing a NR monitoring and evaluation manual;*
- *Activity 4.2.2.: Project monitoring and evaluation mechanisms, including the baseline, and the creation of a database.*

The Department of Planning, Cross-Sector Coordination and Data (DPCID) will be responsible for implementing this activity. A focal point will be designated within this agency. The capacity of the focal point will be strengthened to in turn train DREDD staff at the decentralized level and partners on how to consider and monitor CC aspects and data. The focal point will serve as a relay and facilitator for the creation of a database and an accessible and interactive website. To that end, the focal point will be given appropriate computer equipment.

[27] PARSACC: *Improving the Resilience of Communities and their Food Security to the Adverse Effects of Climate Change*; DSPAI: *Developing an Improved and Innovative Service Delivery System for Climate Change-Resilient Livelihoods*; SCTRC: *Building Capacity, Knowledge and Technologies for the Climate Resilience of Vulnerable Developing Countries*; EPRSA: *Initiating a Resilience Process for Food Security*; PDIM: *Integrated Swampland Development Programme.* ProLPRAF: *Programme for Rural Poverty Reduction through Sector Support*; P2RS: *Multinational CILSS - Strengthening resilience to recurrent food and nutrition insecurity in the Sahel*

[28] NRM: *Natural Resource Managements;* EbA: *Ecosystem based Adaptation;* PES*: Payment for Environment Service*

ANNEX F

REVUWI PROJECT IMPLEMENTATION

I. Components Description

Table 5- Description of Project Sub-Components

Components	Cost (USD)	Description of Sub-components
Component 1: Institutional and local capacity building for sustainable natural resource management	1,080,000	1.1 Public services at various levels, local authorities and community organizations have mainstreamed climate risk into sustainable natural resource management strategies and policies. This sub-component's activities are broken down into: ▪ Activity 1.1.1: Mainstreaming of climate risk into the following strategies: sustainable development and management of water, pastoral and forestry resources; and ▪ Activity 1.1.2: Promotion of best practices in participatory management of resilient natural resources. 1.2 Training and sensitization on climate change adaptation techniques through integrated and sustainable land and water management are promoted in forests and grazing lands areas. This sub-component's activities comprise: ▪ Activity 1.2.1: Training on water operating systems suitable for resilient livestock herding methods; and ▪ Activity 1.2.2: Training the target groups on appropriate climate change adaptation techniques addressing resilient conservation of pastoral and forest resources and best management practices
Component 2: Improvement of climate resilience of water sector investments aimed at adaptation activities for pastoral and forest resources	1,949,000	2.1 Increase agriculture and pastoral productivity via diversified water harvesting devices: ▪ Mechanisms for monitoring and restoration of water resources and ecological services of major wetlands are strengthened: the procurement and installation of 85 reference precipitation gauges and 165 limnimetric scales. ▪ The mobilization of additional water resources is ensured: (i) Construction of 20 pastoral wells, 2 borehole-based drinking water supply systems, and 2 drinking water supply systems from water intakes along the Senegal River; (ii) 6 water harvesting ponds for pastoral needs. The boreholes will be equipped with solar pumps. 2.2. Enhance water management and reliability by improving resilience of existing infrastructures and rural activities ▪ Rural water infrastructure and activities are sustainably protected through: (i) The promotion of good practices deemed resilient and favourable for the replenishment of underground water tables around hydraulic structures, including WSC/SPR29; revitalization of the vegetation cover; construction of 600 ml of filtering dykes in the relevant watersheds sites; 200 ml of gabions; 20 ha of bunds; and 500 ml of filtering dykes in the lowlands; and (ii) The promotion of greening over mechanisms for the protection of rural water infrastructure developed by the project on a surface area of 46 ha. ▪ Supervision and close control of resilience activities in the five southern Wilayas, including water supply works (drilling, DWS systems30) and the development of water harvesting ponds are ensured.

[29] *Water and Soil Conservation/Soil Protection and Restoration*
[30] *Drinking Water Supply*

Component 3: Diversification of rural and agro-pastoral populations' livelihoods	2,738,000	3.1 Natural resource protection works are diversified: ▪ Stabilization of mobile dunes in sensitive sites over 575 acres; ▪ Deferred grazing and plantations over 640 ha (pastoral reserves and restoration of classified forests); and (iii) promotion of a biosphere reserve of the El Athef under exposure area. 3.2 Economic resilience activities for vulnerable farmers living in forest sites and endangered grazing lands are reinforced through: ▪ The regeneration of gum trees; ▪ The introduction of improved stoves and solar cookers; ▪ The promotion of female agro-forestry; and ▪ The promotion of vegetable gardening.
Component 4: Knowledge management and building, Communication, and Project Monitoring and Evaluation	583,000	4.1 Knowledge management and building, as well as communication are ensured at local level: ▪ Promotion of proven local empirical knowledge; ▪ Introduction of innovative approaches to NRM31 (EbA32, Climate-proofing, PES33); ▪ Building on resilient good practices and lessons including gender-specific measures (development of technical standards, organization of exchange visits); 4.2 Communication ▪ Communication channels and mechanisms, policy dialogue for Natural Resource Management in dry areas as PES tool). ▪ Promote a natural resources sustained sharing strategy amongst resources users that upscale and replicates appropriate adaptation measures advocating resilience to climate change 4.3 Project monitoring and evaluation are executed in a timely manner: ▪ Preparation of an NR monitoring and evaluation manual; ▪ Project monitoring and evaluation, including the baseline situation and the creation of a database.

II. Project Intervention Guidelines

In its design, the REVUWI project draws on guiding principles aimed at optimizing and enhancing the sustainability of PNISER achievements. These principles are:

- Additionality: Additional adaptation activity reinforces the climate change resilience of rural water infrastructure and activities introduced by PNISER. In the absence of this activity, this structure may prolong its current state of degradation or may not stands climate effects due to anthropogenic pressure. Additionality seeks to widen the perimeter and diversify supply sources as to lessen the pressure on PNISER's water infrastructure and activities.
- Decentralization: Project interventions will be implemented by decentralized local Authorities structures or service providers at regional or local levels in order to achieve cost efficiency and enhance ownership of the project by beneficiaries. The project will enhance the beneficiaries' ownership on the activities by organizing more consultations and participatory evaluation meetings.
- Partnership: The project promotes partnership with NGOs, other projects and technical and financial partners in a win-win spirit.
- Demand-driven intervention based on the participatory approach and involvement of the populations: The project aim is to meet the beneficiaries' expectations and as well as it will take into account the complementarity with the actions introduced by other partners. The project will support the priority initiatives of village communities or their organizations, but

[31] *Natural Resource Management*
[32] *Ecosystem-based Adaptation*
[33] *Payment for Environment Service*

priority will be given to groups and individuals open to innovation, willing to invest their energies and resources in strengthening and diversifying their livelihood tools to reduce vulnerability to climate shocks. The capacity to mobilize and organize beneficiaries will be a determining factor in the selection of groups to support the project. The commitment of future beneficiaries of the proposed investment will be critical and will be reflected in: (i) the voluntary contribution to financing through human investment in NRM works and participation in the implementation of resilience works; (ii) a commitment to assume basic management and daily maintenance of hydraulic investments; and (iii) participatory M&E.

- Making do: The project, which represents within the PNISER an investment strengthening component, will entrust the implementation of the proposed activities to MEDD, based on a framework agreement, while keeping accounting integrated to that of PNISER;
- Gender mainstreaming: The project adopts an approach based on greater involvement of women, youths and other marginalized social groups to access resources and basic services that will enable them to improve their lives and enjoy their rights;
- Fostering inclusive dialogue: The project is designed through an inclusive dialogue with all stakeholders, particularly the poorest beneficiaries. This approach will be maintained during the construction and management of facilities;
- Principles of adaptation: Any system, however efficient and effective, may deteriorate and become obsolete if it is not able to adapt. Various mechanisms (capacity building, monitoring and evaluation, targeting of vital activities for the population and recommendations of appropriate reforms) planned under REVUWI will allow for the sustainability of its achievements and those of PNISER.

III. Project Cost Breakdown

The total project cost by component, including physical contingencies and price escalation, stands at USD 6,350,000.00. This cost is broken down among the various components and sub-components as shown in the following table 6:

Table 6 - REVUWI Project Costs by Components and Sub-components

Components and sub-components	**Costs (in USD)**
Component 1: Capacity building	**1,080,000.00**
1.1 Public services at various levels, local authorities and community organizations have mainstreamed climate risk into sustainable natural resource management strategies and policies	250,000.00
1.2 Training and sensitization on climate change adaptation techniques through integrated soil and water management are promoted in forests and grazing lands areas.	830,000.00
Component 2: Reducing the vulnerability to CC of water infrastructures and activities	**1,949,000.00**
2.1 Mechanisms for monitoring and restoration of water resources and ecological services of major wetlands are strengthened:	32,867.00
2.2 The mobilization of additional water resources is ensured:	1,613,333.00
2.3 Rural water infrastructure and activities are sustainably protected	167,800.00
2.4 Supervision and close control of resilience activities in five neighbouring Wilayas, including water supply works and the development of water retention ponds are insured.	135,000.00
Component 3: Diversification of livelihoods and sources of income	**2,738,000.00**
3.1 Natural resource protection works are diversified.	1,471,000.00
3.2 Economic resilience activities of vulnerable farmers living in forest sites and endangered grazing lands are reinforced	1,267,000.00
Component 4: Knowledge management and building, Communication, and Monitoring & Evaluation	**583,000.00**
4.1Knowledge management and building, as well as communication, are ensured at local level	301,500.00
4.2 Project monitoring and evaluation are executed in a timely manner	148,500.00
4.3. Operating costs	133,000.00
TOTAL	**6,350,000.00**

Table 7 - Breakdown of Project Costs by Expenditure Category

EXPENDITURE CATEGORY	COSTS (in USD)
SERVICES	1,717,000.00
GOODS	126,867.00
WORKS	4,373,133.00
OPERATING COSTS	133,000.00
TOTAL	**6,350,000.00**

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IV. Components Procurements

4.1. Procurement of goods, works and services

Table 8 – Project procurement of goods, works and services

Project Expenditures Categories	In United States Dollars (USD)			
	Use of NPPs ***	Use of Bank Rules and Procedures	Contracts not financed by LDCF	Total
1. WORKS				
1.1. Construction works of 20 pastoral wells, 2 borehole-based drinking water supply systems, and 2 water supply systems from water intakes*		713,333		713,333
1.2. Construction works of 6 retention ponds*		900,000		900,000
1.3. Water infrastructure, land and erosion control and environmental degradation protection works	167,800			167,800
1.4. Dunes stabilization works over 144 ha	575,000			575,000
1.5. Protection works and plantations	896,000			896,000
1.6. Gum trees regeneration works	322,500			322,500
1.7. Agro-forestry works	102,500			102,500
1.8. Market gardening	696,000			696,000
2. Good				
2.1. Equipment of 85 precipitation gauges & 165 limnimetric scales	32,867			32,867
2.2. Improved stoves and solar cookers	94,000			94,000
3. SERVICES				
3.1. Awareness and mainstreaming of climate change into development policies and strategies		162,000		162,000
3.2. Training (vulnerability, measures and GIS)		234,000		234,000
3.3. Sustainable NR management		540,000		540,000
3.4. Hygiene and sanitation education		50,000		50,000
3.5. Ecological monitoring and resilient management of water infrastructure		94,000		94,000
3.6. Supervision, monitoring and control of borehole-based water supply works*		90,000		90,000
3.7. Studies, monitoring and control of retention pond works*		45,000		45,000
3.8 Promotion of a "biosphere reserve" in El Athef area and introducing PES in rangelands areas		52,000		52,000
3.9. Inventory of knowledge, development of local technical standards leading to a database creation		141,333		141,333
3.10. Preparation of an M&E procedures manual		88,667		88,667
3.11. Organization of exchanges (open house days, visits)	111,000			111,000
3.12 Communication (advocacy, disclosure)	24,000			24,000
3.13. Policy dialogue	25,000			25,000
3.14. Mid-term and final review	60,000			60,000
4. Operating costs				
4.1 Travel costs	133,000			133,000
TOTAL	**4,635,333**	**1,714.667**		**6,350,000**

* Represents amounts to be grouped with amounts of similar PNISER activities or be the subject of amendments to corresponding contracts if the contracts concerned by PNISER have already been awarded.

** National procurement procedures.

4.2. Regulations and Standard Documents

All procurements of goods, works and consulting services financed with LDCF resources will be conducted in accordance with the Rules of Procedure for Procurement of Goods and Works or Rules of Procedure for the Use of Consultants, as applicable, using the standard bidding documents of the African Development Bank, with the exception of community works, which will be conducted in accordance with national procedures.

4.3. Civil Works

- Hydraulic Component

The procurement of construction works for boreholes and drinking and livestock water supply systems (USD 713,000) will be conducted in accordance with International Competitive Bidding (ICB) procedures as described in Section II of the Bank's rules of procedure for procurement of goods and works. The choice of procedure is justified by the nature and size of the works for which there is no sufficient number of qualified contractors in the country to guarantee competition.

Works contracts for the construction of water harvesting ponds totaling USD 900,000 will follow national competitive bidding (NCB) procedures as described in section 3.3 of the Bank's rules of procedure for procurement of goods and works. These are works for which there is no sufficient number of qualified contractors in the country to guarantee competition.

Works contracts for the construction of water infrastructure protection, land and natural resources degradation control totaling USD 167,800 will be conducted in accordance with national procedures for community works. These are works for which Mauritania has proven experience and for which the Bank does not have a standard document.

- Livelihoods Diversification Component

The procurement works for the stabilization of dunes totaling USD 575,000, protection and plantations in the amount of USD 96,000, gum trees regeneration in the amount of USD 322,500, and female agro-forestry totaling USD 102,500 will be conducted in accordance with national procedures for community works.

Works contracts for market gardens totaling USD 696,000 will be conducted in accordance with national competitive bidding (NCB) procedures as described in section 3.3 of the Bank's rules of procedure for procurement of goods and works. These are small-scale geographically dispersed works that would not be of interest to international contractors and for which there is a sufficient number of qualified firms in the country to guarantee competition.

4.4. Goods

- Hydraulic Component

The equipment contract for 85 precipitation gauges and 165 limnimetric scales in the amount of USD 32,870 will be awarded according to the quotation request procedure.

- Livelihoods Diversification Component

The equipment contract for improved stoves and solar cookers in the amount of USD 94,000 will be awarded according to the quotation request procedure.

4.5. Consultancy and/or NGO Services

Procurement of the following consultancy services: (i) awareness and mainstreaming of climate change into development policies and strategies (USD 162,000); (ii) training, including on vulnerability, water system measures, GIS and the creation of a database (USD 234,000); (iii) sustainable natural resource management (USD 540,000); (iv) ecological monitoring and water infrastructure management (USD 94,000); (v) inventory of knowledge and the development of local technical standards (USD 141,333); (vi) establishment of a monitoring and evaluation system and preparation of its manual (USD 88,667) will be on the basis of shortlists and quality and cost-based selection (QCBS) method as described in Section II of the Bank's rules of procedure for the use of consultants.

The selection of firms charged respectively with: (i) studies, monitoring and control of boreholes-based DWS works (USD 90,000) and (ii) studies, monitoring and control of works for water harvesting ponds (USD 45,000) will be coupled to that of PNISER for the same activities or will be the subject of an amendment of its contract if it has already been selected as part of PNISER.

The selection of NGOs for: (i) hygiene and sanitation education (USD 50,000), (ii) the promotion of a biosphere reserve in El Athef area and introducing PES tool in rangelands areas (USD 52,000) will be on the basis of shortlists and quality and cost-based selection (QCBS) method as described in Section II of the Bank's rules of procedure for the use of consultants.

4.6. Miscellaneous

The following activities, namely: (i) the organization of exchanges (open house days, exchange visits) in the amount of USD 111,000; (ii) communication (publicity) amounting to USD 24,000; (iii) recruitment of a local policy dialogue consultant in the amount of USD 25,000; (iv) project monitoring travel in the amount of USD 133,000; and (v) mid-term and final reviews (USD 60,000) will be according to needs and as the project progresses, in compliance with procedures that will be selected in the PNISER administrative and financial procedures manual. These procurements will be subject to ex-post review by the Bank.

4.7. Publicity

A General Procurement Notice (GPN) will be published. The text of the GPN will be agreed upon with the Ministry of Water and Sanitation, and will be published upon approval by the Board of Directors of the GEF grant proposal in at least one national newspaper with wide circulation, on the Bank's website and in the UN Development Business online (UNDB) in accordance with Article 2.7 of the Bank's rules for procurement of goods and works. The GPN will include the list of goods, works and services for which a notice will be published. In addition, each contract for the goods or works must be subject to competitive bidding to be published in at least one national newspaper with wide circulation (the national gazette, if applicable) on the Bank's website and in UNDB online. In the event of national competitive bidding, the publication of specific notice may be limited to at least one national newspaper with wide circulation.

For consultancy contracts, the donee must publish the notice for expression of interest in national and regional newspapers. However, any eligible regional or non-regional consultant wishing to provide services may express an interest to be shortlisted. Moreover, for contract amounts exceeding or equal to UA 200,000 for consulting firms and UA 50,000 for individual consultants, invitations for expressions of interest will be published on UNDB Online and the Bank’s website.

Lastly, following contract award, the results will be published on the Bank's website and in UNDB online in accordance with the provisions of: (i) Articles 2.60 and 3.4 of the Bank's Rules of Procedure for Procurement of Goods and Works and (ii) Articles 2.28 and 3.8 of the Bank's Rules of Procedure for the Use of Consultants. For NCBs, the results could be published in other media accessible to the public and acceptable to the Bank.

4.8. Executing Agency

The project's procurement will be conducted by the following four structures: DH, DA (MHA), DAR (MDR) and CCPNCC (supported by the following four MEDD structures: DPN: improved stoves, reforestation, CES/DRS; DRCL: establishment by Ministerial Order: for the creation of AGCL and El Athef Biosphere Area; DAPL: Wetlands; DPCID: Monitoring & Evaluation, Data Base). These departments will be assisted by engineering firms to be hired within the framework of PNISER. Each of the four technical structures (DH, CCPNCC, DA and DAR) will be responsible for procurement falling within its competence, while DH will also manage common and cross-cutting procurements. In addition, MEDD will establish its own coordination mechanisms within its structure to oversee the implementation of REVUWI. At regional level, monitoring will be conducted by the Wali.

The PNISER coordination unit will be responsible for the entire procurement process. To be consistent with PNISER activities, a request for advance procurement action (APA) is recommended.

4.9. Review Procedures

All procurements for this project, with the exception of those relating to operation, will be subject to ex ante review by the Bank. The following documents will be submitted to the Bank for review and approval prior to publication: ❍ General procurement notice, ❍ Specific procurement notice, ❍ Bidding files or requests for proposals from consultants, ❍ Review reports on the bids of contractors/suppliers with contract award recommendations (goods and works) or Report on evaluation of consultants' technical proposals, ❍ Draft goods and works contracts, if they are amended and different from the draft contracts in the bidding documents, ❍ Evaluation reports of consultants' financial proposals with contract award recommendations complete with the report of negotiations and initialed draft contract.

4.10. Ex Post Review

Procurement of goods and services relating to operation and some monitoring and evaluation activities will be approved by the executing agencies and reviewed ex post by the Bank. Procurement documents, including requests for quotations, evaluation sheets and contract awards, will be kept at the executing agency for periodic review by the Bank's supervision missions. The ex-post audit of procurement to ascertain the accuracy of procurement activities will be conducted during the first supervision mission following the end of procurement. However, the Bank reserves the right to conduct the procurement audit at any time during project implementation. This review will assess the need to make changes or improvements on the procurement arrangements made. The executing agencies will, on a quarterly basis, collect procurement data and incorporate them in the project quarterly progress reports to be submitted to the Bank.

4.11. Implementation Schedule

See Table 9 below.

Table 9 - REVUWI IMPLEMENTATION SCHEDULE

Years	2014				2015				2016				2017				2018			
Activities/Month	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Conditions precedent project start-up																				
Grant Approval																				
General Procurement Notice																				
Signature of Grant Agreement																				
Effectiveness																				
Conditions preceding 1st Disbursement																				
Launch Mission / Inception workshop																				
Institutional Support																				
CC mainstreaming into policies and strategies																				
Participatory natural resources management																				
Training on water operating systems																				
Training on CC for NR conservation & management																				
Improving climate resilience of hydraulic infrastructures & activities																				
Equipment with gauges and staff gauges																				
Construction of boreholes and DWS																				
Construction works of water harvesting ponds*																				
Hydraulic infrastructure protection works																				
Studies, monitoring and control of water harvesting pond works*																				
Studies, monitoring and control of water harvesting pond works*																				
Diversification of livelihoods																				
Natural resources protection works																				
Promotion of a biosphere reserve and PES systems																				
Gum trees regeneration works																				
Introduction of improved stoves and solar cookers																				
Market garden promotion																				
Management & building of common knowledge																				
Promotion of local empirical knowledge																				
Promotion of innovative knowledge																				
Building on best practices																				
Communication																				
Preparation & validation of M&E system & manual																				
Mid-term and final review																				

ANNEX G

CLIMATE CHANGE STORY IN THE PROJECT AREA

IMPACTS OF CLIMATE CHANGE IN THE SOUTHERN WILAYAS OF MAURITANIA

I. GENERAL BACKGROUND

1.1. Overview of the Geographical and Socio-economic Situation

The Islamic Republic of Mauritania is situated in West Africa between the 15th and 27th degrees latitude north and the 5th and 17th degrees longitude west. It extends over a surface area of 1,030,700 km2 of which 75% is desert and arid land and only 0.5% of the total surface area is arable. It is bounded to the north by the Western Sahara, Morocco and Algeria; to the east by Mali; to the south by Mali and Senegal. It is bordered to the west by the North Atlantic Ocean over a coastline of approximately 700 km. Mauritania has three geographic regions, namely: (i) the Saharan region, covering most of the territory to the north, (ii) the coastal region, along the Atlantic strip, and (iii) the Sahelian region, to the far south.

According to RGPH 2013 (General Population and Housing Census) the population stands at 3,458,990 inhabitants, comprising 570,593 households of an average size of 6.1 persons. About 53% of this population lives in the rural areas.

1.2. Environmental Overview

Mauritania is one of the countries with the most pronounced water deficit. The succession of severe droughts, variable and hardly predictable rainfall and a steady increase in human pressure on the natural resource base tend to weaken the fragile ecosystem balance, particularly in the country's wetlands, thus seriously undermining their usage and the services they provide.

II. VULNERABILITY OF NATURAL, PASTORAL AND FOREST RESOURCES

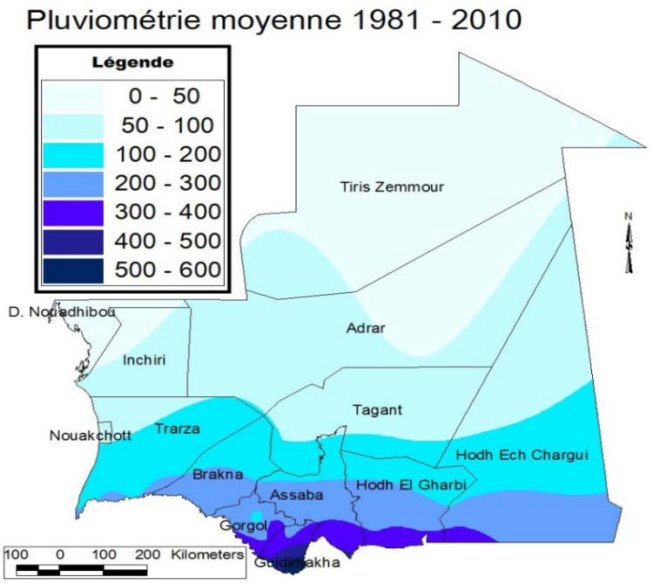
2.1. The target agro-ecological zones of the project

The project area may be subdivided into five ecological zones, based on climatic features.

- Dry zone: this corresponds to the Saharan climate and is situated north of the 100 mm isohyet but excluding the coastline strip. It is the least important stockbreeding area with 3% of the cattle herd, 7% of the sheep and goats and 38% of the camel population
- East Sahelian zone: it lies between the 100 – 200 mm isohyet in the north and the border of the two Hodhs with Mali. This zone is home to 50% of the country's sylvo-pastoral potential (64% of the cattle herd, 49% of the sheep and goats and 40% of the camel herd);
- West Sahelian zone: it lies between the 150 mm isohyet in the north and the Senegal River Valley and accounts for 33% of the cattle herd, 44% of the sheep and goats and 22% of the camels.
- The river zone: most of Mauritania's agricultural activity takes place here.
- The coastline: an approximately 150km-long strip north of Ndiago.

The encroachment of the desert is very pronounced in the above-mentioned ecological zones, with a marked north-south displacement of the isohyets, thus confining the useful territories, in terms of agro-sylvo-pastoral activities, essentially to a narrow strip in the south of the country (see Figure 1).

Figure 1: Trend of the isohyets within ecological zones



Source: MEDD / CCPNCC, TCN, 2014

2.2. Vulnerability of Pastoral Resources to Climate Change

The potential grazing land, which depends primarily on both Sahelian and river valley ecosystems, stands at 13,848,000 hectares, that is, 14% of the total surface area of the country. Pastures are undergoing degradation owing to localized livestock pressures and the related inaccessibility of pastoral areas.

Direct impacts of climate change on pastoral resources include:

- a decrease in the production of fodder, which constitutes the basic cattle feed and is heavily dependent on climatic conditions, particularly on rainfall;
- a drop in the groundwater table and the early drying up of ponds, which poses problems of livestock watering;
- a decrease in and deterioration of grasslands ;
- difficulty of access to livestock feed ;
- reduction and degradation of pastures (insufficiency);
- the indirect and socio-economic impacts of climate change on pastoral resources, which are reflected by:
  - high cattle and meat prices resulting from reduced supply stemming from livestock mortalities caused by droughts/floods;
  - the conversion of a large number of nomadic herders into settler breeders;
  - a decline in the incomes of stockbreeders; and
  - a change in the composition of herds through the gradual replacement of cattle by small ruminants and camels.

The impacts of climate change (CC) on this sector add to other pressures and vulnerabilities that already characterize stockbreeding in Mauritania, in particular:

- Steady decrease in natural pastures on account of bushfires. Generally, fire is a real threat for the plant formations even though the pastoral surface area lost annually to

fires is relatively small (between 0.006 and 0.16% per year) compared to the expanse of the country's pastoral area. Indeed, from 2007 to 2012, the average surface area destroyed by fire was only 1,362 ha/year. The area lost to fire dropped from 2,322,000 ha/year in 1995 to 203,205 in 2010. The Wilayas (regions) of the Hodh El Chargui, Hodh El Gharbi, Assaba, Gorgol, Brakna, Trarza and Guidimakha are the most affected by the problem of forest fires.

Table 10: Mauritanian livestock feed balance (FAO 2001).

Wilaya	Pluviométrie (mm)	Phytomasse consommable (T/MS)			Besoins MS en T	Bilan MS en T
		Pâturage herbacé	Pâturage aérien	Total production		
D. Nouakchott	-	-	-	-	-	-
Hodh Echargui	242	2 174 040	549 000	2 723 040	1 750 517,4	972 522,6
Hodh Gharbi	204	1 268 784	320 400	1 589 184	1 324 992,5	264 191,5
Assaba	216	923 967	233 3258	1 157 292	1 011 510,9	145 781,1
Gorgol	240	383 724	96 900	480 624	663 364,9	-182 740,9
Brakna	220	343 035	111 375	454 410	740 700,3	-286 290,3
Trarza	225	548 163	177 975	726 138	7016 755	9 363
Adrar	132	852 588	484 425	1 337 013	526 594,8	810 418,8
D. Nouadhibou	22	528,7	401	929,2	0	929,2
Tagant	154	60 588	34 425	95 013	500 837,9	-405 824,9
Guidimaka	321	333 102	75 705	408 807	785 329	-376 522
Tiris Zemmour	64	7 722,4	5 850	13 572,8	165 010,6	-151 437,8
Inchiri	88	125 433	71 269	196 701,8	288 947	-92 245,3
TOTAL		**7 021 675**	**2 161 050**	**9 182 725**	**8 474 580,5**	**708 144,2**

- Obstruction of the livestock crossing routes and the disappearance of transhumance tracks in flooded areas, following growing competition between agricultural and pastoral lands.
- Shortening of the duration of transhumance, prolonged concentration of livestock around permanent water points, displacement of pastoral lands from the North toward the more favorable Sahelian and River Valley areas of the South, following the recession of grasslands and of fodder trees owing to the high concentration of livestock in already weakened areas.
- The search for new pastures, which often results in conflicts with farmers.

2.3. Vulnerability of the Forestry Sector to Climate Change

In Mauritania, forestry is crucial in the fight against poverty in rural areas. Indeed, the forestry sector plays a decisive role in the socio-economic life of the population, including nomads and women. The rural population derives more than 80% of its income from the exploitation of natural resources in general and forestry in particular for the significant goods and services it provides: food security, trade, crafts, more than 80% of energy needs, pharmaceutical products, ecotourism, biodiversity conservation, improvement of the living environment, etc.

Data for characterizing Mauritania's forests and their trends remain very limited or even non-existent. As a matter of fact, no national inventory of timber resources has ever been conducted. All the available data are FAO valuations, which estimated the forest cover at 242,000 ha in 2010 as against 415,000 ha in 1990, and woodlands at 3,060,000 ha as against 3,110,000 ha during the same periods, representing a deforestation of 5,000 ha/year for the forests and 10,000 ha/year for the other woodlands (FAO, 2010). Plant species of the forest are of low commercial value and are characterized by stunted growth and poor health. Output volumes are estimated at 20 m³/ha for forests and 10 m³/ha for woodlands and the foliar biomass of forests stands at more than 2 tons of green matter/ha (FAO, 2010).

Close to 20% of forests are classified (48,000 ha in 2002) and three of them, out of 30, with a total surface area of 5,100 ha, have their own development plans. They are managed by local forestry

communities (NGOS and forestry co-operatives) and benefit from the support of some State projects. Forest plantations are estimated at over 25,000 ha (absence of reliable data).

All the country's forests are subjected to animal and human pressures in order to meet the growing needs in terms of pastures, (especially during the periods of shortage in animal feed), timber for fuel wood and non-timber forest products. This is compounded by losses caused by termites, bushfires, storms and drought.

Natural productive formations are confined mainly to the South and the south-east of the country along the Senegal River and in the wetlands, with an annual growth rate estimated at 0.16m3/ha/year. These formations consist of open forests and wooded-to-shrubby savannah. The north of the country is a desert with less productive natural formations.

These natural formations have undergone profound changes resulting from a combination of climatic and anthropogenic factors (land clearing for agriculture, excessive wood cutting, overgrazing, bush fires etc.).

During these last decades, the decline in rainfall, combined with the rise in temperatures as well as the frequent and severe episodes of droughts/floods, have adversely affected forest formations. These are in addition to the needs of a growing population, which results in:

- Excessive wood cutting;
- A high demand for farmlands, pasturelands and forest products; and
- Persistence of extensive production systems.

Thus, and in addition to the changing climate and its negative consequences, the degradation of Mauritania's forest can be ascribed to:

- Clearing: the surface areas cleared annually are hardly monitored and it is considered that land clearing is the main cause of disappearance of several thousands of hectares of classified forests.
- Excessive logging: the supply of fuel wood to urban centres exerts considerable pressure on the natural forest formations. It is estimated that the quantities of fuel wood harvested through authorizations granted to foresters are lower than those harvested fraudulently. There are no clear and reliable statistics on the quantities of wood harvested annually;
- Bush fires: the surface area burnt each year was estimated in 2010 at 203,205 ha. In addition to the loss of plant biomass, these fires destroy the texture and structure of the soil, thus exposing the latter to wind and water erosion; and
- Over-exploitation of biomass through the harvesting of timber and non-timber forest products.

The forest is primarily used for fuel wood and secondarily for grazing. In addition, it is degraded or even destroyed along waterways as a result of land clearing.

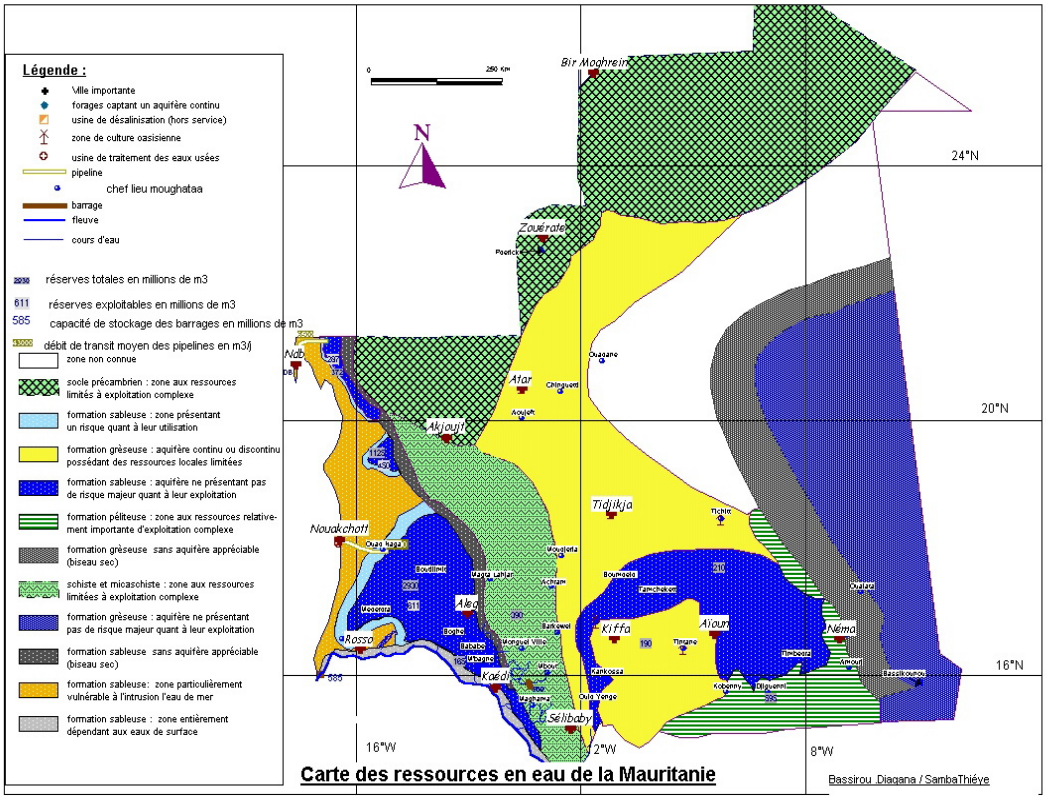
2.4. Vulnerability of Water Resources to Climate Change

The main direct and indirect impacts of climate variability and change on Mauritania's major development sectors were identified during the vulnerability and adaptation studies conducted as part of the preparation of the CNI, PANA, SCN and TCN (May, 2014). These impacts were identified through the combination of objective and factual observations, consultations and information sourced from local knowledge in the field and a few presumptions of causality backed by current scientific knowledge.

All these studies and analyses have confirmed that although Mauritania has potentially significant surface water and groundwater resources, some of the current handicaps and weaknesses could be compounded by the effects of climate change. This concerns the following aspects in particular:

- poor spatial and temporal distribution of the above-mentioned water resources;
- considerable evaporation of surface waters owing to high temperatures and winds ;
- very limited harnessing of water resources;
- continued deterioration of water quality due to the silting up of rivers and pollution of some others;
- a drop in the level of groundwater as well as an increase in runoff and water erosion;
- a decrease in water quality and quantity;
- increasingly low flows at the level of the waterways (early drying up of water points such as ponds, wells etc.); and
- lags in the commencement and ending of the rainy season, pockets of drought during the rainy season, decrease in the length of both the rainy season and farming season, rural exodus.

Moreover, one of the consequences of CC on waterways (ponds, Tamourt, etc.) is the proliferation of floating plants (water salad, hyacinth, typha etc.) owing especially to a reduction in the flow speed of waterways, change in their temperature as well as the deterioration of the quality of water.



2.5. Vulnerability of the Agriculture Sector to Climate Change

In Mauritania, agriculture is heavily dependent on rainfall either directly (rain-fed) or indirectly (irrigated). It is also dependent on temperatures, heat waves, winds. These factors are expected to undergo significant changes in the coming years/decades. It is therefore certain that the agricultural sector is particularly vulnerable to climate change.

It has been shown that the vagaries of the climate observed in recent decades have had an impact not only on rain-fed agriculture through the temporal irregularities of rain but also on farming around dams. In fact, the late beginning of rainy seasons has caused late inflows of water into the dams, thus resulting in a deficit in water to irrigate the arable plains situated behind the dams.

The expected impacts of climate change on agriculture include, in particular:

- variation in the commencement and end of rainy seasons, leading to fluctuations in the duration of the latter as demonstrated by the late set-in of the season and a premature end of rainfall;
- modification in the growth cycles of plants, which affects agriculture and food production and has adverse effects on harvests;
- modification of the distribution and surface area of arable land with the resultant acceleration of large-scale deforestation;
- a decline in crop yields; and
- food insecurity issues which could constitute a major problem for the country and could result in the aggravation of poverty; unless it is quickly addressed, this poverty situation would invariably get worse because of the population growth rate of about 2.4%.

III. IMPACTS OF CLIMATE CHANGE

3.1. Major Climate Events Observed

Starting from the baseline climate, namely the normal climatic pattern between 1961 and1990, climate variability is characterized by the following trends (TCN[34], 2014):

- data on rainfall in the synoptic stations reveal a general gradual decline in rainfall of 0.5 to 2 mm/year and hence the recurring droughts;
- an overall trend of lengthening of the dry seasons by 10-15 days per decade in the REVUWI project area;
- a downward trend regarding low temperatures (65% of the stations); and
- an increase in the frequency of severe climatic occurrences - winds/rain/heat wave.

3.2. Climate Projections for the Periods to 2050 and to 2100

The forecasts are based on the modelling carried out by the TCN (2014).

Expected rainfall trends

- By 2050 - a pessimistic model forecasts a decrease in rainfall within the project area by approximately 20% compared to the baseline climate (1961-1990), whereas another model forecasts the drop in rainfall at 5-10%.
- By 2100 - the trends are expected to worsen with a decline in rainfall of about 30-50%, according to a pessimistic model, whereas a more moderate model forecasts a drop of 10-20%.

Expected temperature trends

- *By 2050* - the pessimistic model predicts a general temperature increase of approximately 2°C; whereas the moderate model predicts a temperature rise of between 1.5 and 2°C.
- *By 2100* - the pessimistic model predicts a sharp increase in temperature (3-4°C); whereas the more moderate model forecasts warming ranging from 2.5°C to 3.5°C in the project area.

3.3. Socio-economic Impacts Observed

These different climatic occurrences have had the following 4 key socio-economic impacts:

- overgrazing and straying of herds into farmlands causing conflicts between stockbreeders and farmers;
- increased pressure on wetlands and swamps;
- expansion of irrigated agriculture in the valleys; and
- Deforestation and cutting of fuel wood.

[34] TCN: Third National Communication on Climate Change (Troisième communication nationale sur les changements climatiques)

All these factors have resulted in soil degradation, increased water-related conflicts and the destruction of natural resources in new habitats. This has led to: (i) a drop in revenue accruing from agriculture and wild foods gathering, thus leading to food insecurity and worsening of poverty; (ii) loss of the security of livelihoods by farmers and increased conflicts; and (iii) a disruption in the modes of production as well as an increased workload for women.

3.4. Identified Consequences on Biophysical Elements

Generally, the following disruptions are observed:

- Southward displacement of the 100 mm isohyets to the agro-ecological zones and a decrease in the usual period of plant growth by 20 to 30 days;
- Reduction in the productivity of lands and a decrease in biodiversity;
- Reduction in the soil infiltration capacity and faster run-off and erosion;
- Acceleration in the level of evaporation from vegetation-free surfaces (>10 mm/day in hot periods, i.e. more than 2,600 mm per year) and a decrease in the infiltration capacity of aquifers.
- Movement of sand dunes, which constitutes a major soil degradation challenge for human settlements and a challenge for infrastructure.
- Destruction of natural resources in general, resulting in high pressure on ecosystems, a rise in the incidence of poverty, especially in the rural areas, and an increase in rural exodus to major urban centres.

3.5. Sectoral Consequences on Water Resources

Surface water resources, estimated at 6 billion m^3, are made up essentially of the Senegal River and its tributaries as well as the catchment areas of dams, spread over the south and central part of the territory. The country is awash with substantial groundwater resources but these are characterized by their uneven geographical distribution. This groundwater situation is favorable in the South-West, South and South-East regions (the substantial and continuous water tables of Trarza and Taoudéni, which are found in sedimentary units, as well as water tables of the Senegal River Valley). Periodic uptake flows are high in these areas, and reserves are estimated at close to 50 billion m^3. The situation is less favorable in the rest of the country where the water tables are irregular and the water resources more unpredictable. Apart from these aquifers, there are some shallow water tables, called perched water tables, emanating from depressions into which run-off waters flow.

Apart from the surface water resources from the Senegal River, and in spite of being considered as a desert country, Mauritania has numerous extensive wetlands which are among the richest and most productive ecosystems. They constitute precious assets that must be preserved and restored, as necessary. Traditionally exploited by inhabitants of the area, these wetlands serve multiple purposes, namely, fishing, recession agriculture, fodder production for times of animal-feed shortage, wild-food gathering and multi-purpose water supply. Thus, they are at the heart of the rural economy and are also ecosystems with considerable ecological value. The multi-purpose use of the resources of these wetlands reduces the risk of famine and the other consequences of drought. Yet, these wetlands top the list of the most endangered natural environments. The pressure of anthropogenic activities is the cause of their degradation and sometimes even of their disappearance. During the past three decades, the Mauritanian population has recorded rapid growth, settling with their herds around the wetlands, thus resulting in increased pressure on these resources. The survival of these different wetlands, following the significant settlement of nomadic tribes since 1970, hinges on the various development choices which should focus on the sustainable management of the natural resources of these areas.

3.6. Sectoral Consequences on Pastoral Resources

- According to the statistics published by the Directorate of Livestock/MDR, national livestock numbers in 2011 were estimated at 1,724,927 cattle; 13,810,854 small ruminants (sheep and goats) 1,369,828 camels; and 880,000 donkeys and horses. Given that this animal production greatly depends on the availability of fodder and natural pastures, it is characterized in general by short periods of weight gain and an increase in dairy production during the wet summer months (3-4 months), followed by a long dry season which lasts between 8 and 9 months. An analysis of the biomass shows that Mauritanian range lands rely heavily on climatic conditions and the production of range lands varies significantly from one Wilaya (region) to the other, depending in particular on the volume of rainfall. In this regard, availability, coupled with calculations on the Wilaya's carrying capacity, show an overall positive fodder balance and a surplus compared to the total needs of ruminants. The two Hodhs and the Assaba account for more than half of the national fodder potential, estimated at 9,182,725 tons of dry matter (T/DM) for needs assessed to stand at 8,474,580 T/DM. However, it should be noted that although the balance is positive, the availability of fodder is concentrated over a very short period of the year and some pastoral areas remain unexploited owing to the distribution of livestock watering points and the recurring damage caused by bushfires. In addition, frequent droughts force stockbreeders to move their livestock to riparian countries such as Senegal and Mali, on the one hand, and on the other hand, they lead to the emergency plans that weigh heavily on public finances,.

3.7. Sectoral Consequences on Forest Resources

There is limited information on Mauritania's forest potential because the last inventory of these resources dates back to the eighties. The sylvo-pastoral area covered approximately 13.8 million hectares, representing 13% of the country's total surface area and it is broken down as follows: 47% in the Hodhs, 30% in the Senegal River valley, 18% in the Assaba and 5% in the Tagant. The forest formations, including 48 classified forests of a total surface area of 48,000 ha[35] and nearly half of which is situated along the Senegal River, occupied an area of approximately 4,385,000 ha divided into 3,785,000 ha of shrub lands, 725,000 ha of open woodlands and 77,000 ha of dense woodlands. Ultimately, considering the outdated inventories of pastoral resources, it is difficult to determine the pace and intensity of degradation of the above-mentioned resources. However, and despite a few natural regeneration pockets, the trend shows a shrinking of sylvo-pastoral areas as a result of the heavy anthropogenic pressures, climate change, deforestation for irrigated agriculture along the Senegal River and various other needs such as that of fuel wood.

ANNEX H

DESCRIPTION OF INNOVATIVE TECHNOLOGIES PROMOTED BY THE PROJECT

I. MODEL FOR SUSTAINABLE MANAGEMENT OF WETLANDS

The following model is provided in view of implementing climate-change-resilient pilot activities to be conducted in five important wetlands. This innovative tool provides at the same time an overview of Mauritania's ecosystems exposed to desertification while threatened by climate change impacts and human activities. It introduces successively: (i) wetlands typology; (ii) wetland services provided; (iii) the role and functions played by the wetlands; (iv) Current findings; and (v) the sustainable management model.

1.1. Ramsar Wetlands Typology[36]

The Ramsar Convention has classified wetlands **into marine/coastal wetlands, inland wetlands and "artificial" wetlands**. This categorization provides a broad framework for the quick identification of

[35] Most of these forests now exist only in name having been completely razed by uncontrolled farming and climate change. Efforts to harness the waters of the Senegal River, through the construction of the Diama Dam to meet the irrigation needs also contributed to the degradation of gallery forests along the River.

[36] *Most of the information presented in this section is extracted from the study on Mauritania's National Wetlands Conservation Strategy (Source: Amadou Ba et al, IUCN 2013)*

the major types of wetlands. ***Inland Wetlands*** also contain a variety of habitats, including fourteen major inland wetlands[37].

National Typology: There is a typology of wetlands specific to Mauritania. It covers fifteen[38] categories. A numerical wetlands classification based on an inventory of plant species of a scientific, pharmaceutical or food value can be added to this typology. Wetlands characteristics[39] vary annually. When seasonal rainfall is low, some wetlands dry up. It should be recalled that wetlands provide habitat for a wide variety of animal species, including aquatic invertebrates, water birds, reptiles and others.

1.2. Services Provided by Wetlands

Through the various roles played by wetlands, it is possible to highlight services related to these ecosystems by combining the said roles. According to the local context, services provided can be

of different types and below are few:

- *Water Resources*

  Thanks to their hydrological functions, wetlands play an undeniable socio-economic role in helping to supply drinking water for human consumption. They also provide water for agricultural and industrial purposes.

- *Natural Risks Prevention*

  Hydrological functions help in preventing floods. Wetlands therefore allow for substantial financial savings by preventing damage. Conversely, wetlands' role as a water harvesting reservoir and its influence on the micro-climate can help reduce the harsh impact of severe drought (low flows support, increased atmospheric humidity) in some particular landscape.

- *Production of Biological Resources*

  The high biological productivity that characterizes wetlands results in a significant agricultural, pastoral, forestry and fisheries production, whose financial impacts, yet hard to quantify with precision, are considerable.

- *Wetlands Values Chain*

  Wetlands are part of the landscape and cultural heritage. They also support touristic and recreational activities which are socially and economically significant. Today, wetlands are a key magnet, particularly, for city dwellers. They are also an excellent pedagogic tool to raise awareness of the diversity, dynamics and functioning of ecosystems.

1.3. Functions of Wetlands

It is therefore obvious that ecological functions and economic values of wetlands are closely related. Consequently, their management must be designed in an integrated manner within the framework of sustainable development initiatives and rational planning.

- *Biological and Ecological Functions*

  Wetlands are a valuable biodiversity reservoir. Variability in water conditions is specific to these ecosystems. In Mauritania, several remarkable and endangered plant species live only in wetlands. These wetlands are recognized for their role in the migration of water birds to which they provide food and habitat. Wetlands generally play different essential roles in the lives of numbers of organisms that depend on them:

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37 *Permanent or seasonal rivers, waterways and streams; permanent, seasonal or intermittent freshwater lakes; permanent seasonal or intermittent ponds and freshwater marshes on inorganic soils, non-forested peat lands, freshwater wetlands.*

38 *Tamourts, gaats, wadis, Tichillit, Touemeritt, Makhem, Americhe, Aguenni, Oases, Sabkha, Gligue, Chemsiya, Daya, Lemseille and Guelta.*

39 *Length, depth and size of wetlands.*

- *Climatic Functions*

  Wetlands play a role in regulating micro-climates and climax. Precipitation and atmospheric temperature can be influenced locally by intense water evaporation from land and vegetation (evapotranspiration) which characterize wetlands. They can therefore cushion the impact of drought to the benefit of certain agricultural activities. The demonstration of the ecological, economic and social benefits of the conservation of wetlands, today calls for conferring on them the **status of natural infrastructure** in order to recognize the dual functional and heritage benefits they provide:

  - Water Functions:
    Maintaining and improving water quality by acting as a filter (physical and biological); regulation of water regimes (decreased floods intensity, low flow support).
  - Biological Functions:
    Biodiversity reservoir; food supply and reproduction function; shelter, refuge and rest functions
  - Climatic functions of regulating micro-climates.

1.4. Findings

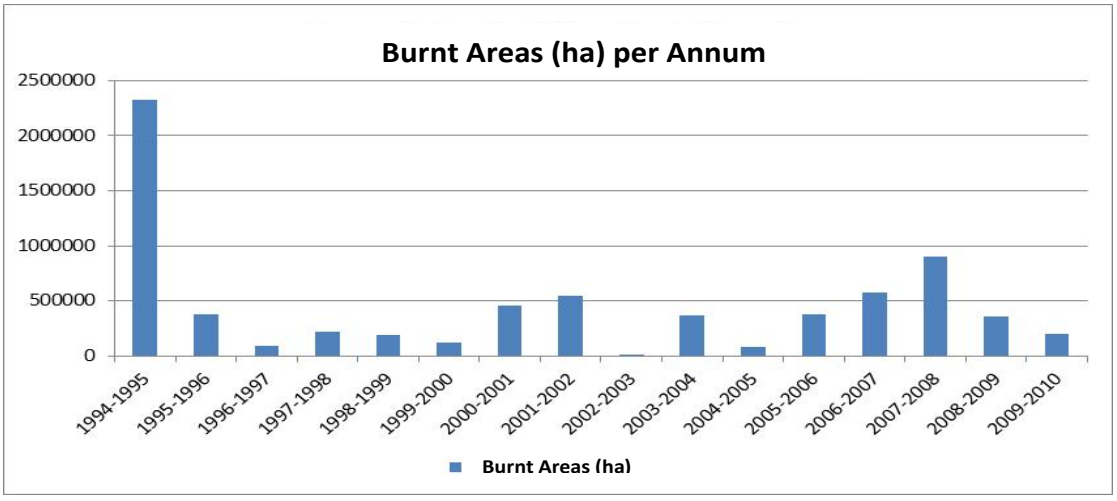
The major threats to wetlands and terrestrial ecosystems include: One of the factors that curtail the range of goods and services that wetlands provide to people today is the implementation of single-sector development programmes to reduce the food production deficit and meet the pressing needs (for wood, pastures, harvest, etc.) of a growing population. This is why most wetlands in flood plains are no longer sufficiently flooded nowadays and endorheic basins are almost entirely silted as a result of the combined effects of drought and desert encroachment. Despite these phenomena, there are still exceptionally rich sites, the protection of which requires the adoption of conservation measures.

- **Overgrazing.** Article 11 of the law on the Pastoral Code stipulates that herders and their livestock shall enjoy, under all circumstances, subject to temporary limitation …, the right to pastoral resources on areas other than those assigned, temporarily or permanently, to the exclusive right of use of third parties. The law further states that pastoral water resources, tree or brush grazing areas and saltlicks belong to the nation, except those located in collective or individual private property (Article 9). Also, due to poverty, a special pastoral areas operation system has been developed involving the local population and traditional users with larger herd belonging to urban investors. The pastoral zone covers an area of 13,848,000 ha, about 14% of the country's total land mass.
- **Overexploitation of forest and non-wood products:** Although the Forestry Department focuses on controlling the use of non-wood forest products for marketing purposes (firewood and charcoal), these are currently overexploited and sometimes outside the control of competent authorities. Non-wood forest products (leaves, fruit, gum, tree bark, etc..) are seriously and illegally overexploited. In certain cases, there are not enough seeds to regenerate them naturally. There is a high poverty index among the rural population and as such natural wetland resources are their main sources of income. This situation is aggravated by the lack of appropriate regulation for participatory management i.e. co-management of these woodlands, whereas the Forestry Code provides for the transfer of management to local communities and the delegation of management to associations and individuals.
- **Habitat fragmentation:** Mauritania's vegetation is highly fragmented. The main causes are drought and desertification. In addition to these natural causes, there is the conversion of wetlands into agricultural land. It should be noted that a wetland cannot, in any case, contain as many species as a full wetland and that it would continue to lose its biological value as a result of fragmentation even in the absence of other pressures. The fragmentation of wetlands and natural areas is the result of land clearing for agricultural and urbanization purposes which is a real threat to the sustainability of natural resources.
- **Poaching**: Poaching is a real constraint on conservation and sustainable use of the biodiversity. Many species, both fauna and flora, are harvested illegally. Even for some of the most

endangered, "monitored" and "regulated" species, it is not uncommon to come across illegal harvesting. With technological development (the advent of all-terrain vehicles and GPS), all species are being poached even in the most remote areas where access is difficult. This concerns, in particular, waterfowls and Sahel-Saharan antelopes (Dorcas gazelle, red-fronted gazelle, Barbary sheep, etc..).

- **Listed Species**: Plant species are also illegally exploited. Their exploitation is regulated by the Forestry Code. Despite the Forestry Department's supervision, almost all species are exploited illegally for various purposes (firewood, charcoal; lumber; timber; medicine; fruit, flower and leaf harvesting; fodder, etc..). The most endangered species are those used as firewood and charcoal. These include Acacia nilotica, Acacia raddiana, Combretum glutinosum, Pterocarpus lucens, etc. Other species that provide exudation products (gum) such as Acacia senegal, Acacia seyal and Commiphora africana are mutilated through illegal tapping practices. Scleroca ryabirrea, Balanites aegyptiaca and Dalbergiame lanoxylon are also poached for fodder (Scleroca ryabirrea only) and lumber. The illegal exploitation of wood and non-wood forest products for medicinal purposes involves virtually all species.
- **Quarries**: Poaching also relates to the opening of quarries for the extraction of sand and gravel which, in the long term, more or less leads to profound changes in the morphology of soils and wildlife habitats.
- **Climate Change**: Biodiversity is profoundly affected by climate change which is witnessed in the country, mainly through decreasing rainfall as well as increasingly frequent and longer droughts. Higher temperatures and lower rainfall put wetlands under severe stress. This has resulted in degradations, a decrease in the area of wetlands, loss of agricultural land and a weakening of the ecological balance necessary and vital for the country's sustained socio-economic development. Climate change has a negative impact on wetlands, their productivity and on the biodiversity of the animal, plant and microbe populations, which use these ecosystems as habitats.
- **Bushfire**: Generally, fire is a real threat to vegetation although the pastoral surface area lost annually due to fires remains relatively small compared to the country's vast pastoral areas (between 0.006 and 0.16% per year). Indeed, from 2007 to 2012, the average surface area destroyed annually by fire was only 1,362 ha / year. The burned surface area decreased from 2,322,000 ha/year in 1995 to 203, 205 ha/year in 2010. The Hodh El Chargui, Hodh El Gharbi, Assaba, Gorgol, Brakna, Trarza and Guidimaka Wilayas (regions) are the most affected. This reduction in burned areas is the result of the considerable financial efforts made by the State to check bushfires by establishing and sustaining a firewall network, sensitizing the rural population and creating fire control committees in each agro-pastoral Wilaya (region).

Graph 1: Pastoral Areas Burnt per Annum



- **Urbanization**: From an environmental perspective, urbanization constitutes a real threat to natural areas and their biological components. Indeed, rural nomads account for only

5% of the population as against 73% in the sixties and the urban population, that is, the population living in cities of at least 5,000 inhabitants, currently stands at close to one in every two inhabitants, whereas it accounted for 3% of Mauritanians at the time of independence. The Mauritanian population is concentrated in three main areas: (i) Nouakchott; (ii) in Nouadhibou; and (iii) in the villages and small towns of the south-eastern pastoral region and the agricultural valley of River Senegal. It is this last grouped areas that constitute the biodiversity biotope and has the highest population density, estimated at over forty inhabitants per $km^{2.}$. If the average population density at the national level is 2.4 inhabitants per km2 this rate generally decreases as one moves from north to south.

- **Salinization**: The main causes of salinization are the arid climate, poor drainage associated with the rising water table, use of less water-efficient irrigation techniques and, to a lesser extent, the abusive use of chemical fertilizers along the river valley.
- **Erosion**: The agricultural system and, more particularly the soil, is severely affected by wind erosion which strips away top soil when it is developed without protective measures to reduce the speed of wind blowing over it. Soil trampling by livestock also contributes to degrading the soil's texture and structure. Due to the winds, silting is also threating wooded areas as well as waterways and infrastructure (roads, houses, wells, etc.). In areas with steep slopes such as Guidimaka, water erosion has destroyed soil quality and caused the disappearance of vegetation, which protected the soil, as well as the loss of agricultural land. Today, rain-fed agriculture is practiced on creek beds which are responsible for loss of habitat of flora and fauna due to land clearing in these areas.
- **Introduction of Foreign Species**: In some cases, the introduction of invasive foreign species ended up creating a real environmental problem following the replacement of indigenous formations. This concerns, in particular, Prosopis juliflora which was introduced in Mauritania to serve as a fencing and shade tree and later for biological purposes due to its ability to adapt to sand accumulation zones and its low water requirements. In places where the water table is shallow, this species forms impenetrable mono-specific thickets. This phenomenon particularly visible in glazes connecting the flood plain where this species is used to stabilize dunes, which threaten these plains with silting. It is also used in oases. Another species, Salvinia molesta, appeared in 1999 in the lower delta. This species is characterized by its ability to rapidly increase its biomass in a few days and occupy all the open water areas, which has adverse consequences on biodiversity of the freshwater environment.
- **Mining and Petroleum Exploration**: The Mauritanian Government currently provides mining and petroleum exploration licenses for the whole country (marine and inland environment) to many foreign companies which would not hesitate to sacrifice wetlands.

1.5. Wetlands Sustainable Management Model

The management model promoted by the project in pilot wetlands will draw on all these threats to wetlands and will use the following study proposals:

- Maintaining areas to ensure wetland functionality;
- Maintaining and enhancing wetlands value;
- Facilitating and implementing the National Conservation Strategy Action Plan;
- Strengthening stakeholder capacity; and
- Mobilizing substantial financial resources for wetlands.

Management Plan Implementation

The project will target five important wetlands (no more than one per region), which will be selected on the basis of criteria that will be defined during the project commencement workshop. A characterization study will be undertaken by a consultant at the project start on the basis of the above data with a view to defining not only the wetland's ability, but also and above all, the state of the wetland natural resources degradation. A management plan will be proposed for validation by the

population and beneficiaries of services of each of these wetland ecosystems. The relevance of creating and running a scientific committee to monitor these wetlands will be examined by the same study.

The implementation of the selected management plan will be entrusted to a national NGO under the supervision of the Directorate for Protected and Coastal Areas (DAPL). The NGO with the best management plan proposal will be selected, following evaluation of the said plans by regulatory bodies established at the MHA and approved by the PNISER Steering Committee. The management plan will be selected from those submitted by competing NGOs following an expression of interest. These NGOs figure on a short-list drawn up by the DH in cooperation with DAPL and CCPNCC, following a reasoned opinion, where applicable, by a scientific committee. The opinion of the said scientific committee is necessitated by the specific nature of the environmental works to be undertaken.

II. ECOSYSTEM-BASED ADAPTATION (EbA)

2.1. Context

The world's population is dependent upon intact ecosystems and the services they provide such as soil fertility, clean water and food. This is especially true for poor people in developing countries whose livelihoods are closely linked to natural resources. Climate change is one of the major causes of change and deterioration of ecosystem services and its impact is likely to increase in the future. At the same time, healthy ecosystems help the population and nature to adapt to the impact of climate change.

2.2. Objective of the EbA Approach

The objective of the EbA approach is to reduce vulnerability of the populations to climate change. It differs from sectoral adaptation by its holistic and multi-sectoral dimension.

2.3. Where does the EbA Approach Apply?

Ecosystem-based adaptation (EbA) uses "green infrastructure" and ecosystem services intentionally to strengthen the climate-change resilience of human communities. EbA is therefore an anthropocentric approach which focuses on how ecosystems can help people adapt to current climate variability and future climate change. EbA is used in areas where vulnerability is multifaceted affecting multiple sectors such as water management, food security, disaster-risk reduction, inland-flooding reduction, the health sector and aspects relating to soil fertility loss which affects agricultural productivity. EbA measures include ecosystem conservation and restoration (degraded forests rehabilitation and reforestation) as well as sustainable management (integrated wetlands planning and management, rangeland use regulation and promotion of alternative income sources for local communities). The STRC project, supported by LDCF/UNEP/NDRC[40], introduced this approach for a year in Mauritania and initial results are conclusive.

2.4. How Does the EbA Approach Work?

Unlike current approaches to natural resources and biodiversity management, EbA evaluates and chooses measures on purpose within the context of a holistic adaptation strategy:

- it is based on studies on climate change impact or integrated climate analyses using climate-related scenarios and models;
- it analyses the causal link and the pressures caused by climate change;
- it compares the costs and effectiveness of various adaptation measures; and
- it monitors the impact resulting from adaptation.

Thus, while conventional development and nature conservation projects can also generate concurrent positive benefits for adaptation in ecological and socio-economic terms, EbA focuses on adaptation

[40] *Abbreviations: STRC (Capacity Building, Knowledge and Climate Resilience Technologies in Developing Countries)* NDRC *(National Development and Reform Commission of China).*

needs and the benefits that could stem from adaptation. However, it is important to note that many EbA projects began as traditional nature conservation or natural resources management projects and have not produced all their adaptation potential on time. The lesson to be learnt is that this delay is largely caused by the constraints of the sectoral approach. Exploitation of the waters of the Kankossa Basin for market gardening without paying proper attention to natural resources degradation and the reduction of the reserve's water volume speaks volumes.

III. INNOVATIVE TRAINING MODULES

Themes	Modules	Target Audience
Climate Change	Relationship between climate change & development	MEDD, MHA, MDR, DREDD and DRHA
	Integrating CC into national sector policies & strategies	MEDD, MHA, MDR Central Directorates and Target Communes
	Tools for analysing vulnerability to CC of the water, forests and pastoral resources sectors; *climate proofing*	MEDD, MHA, MDR DREDD and DRHA
	Tools for selecting and prioritizing adaptation options	MEDD, MHA, MDR DREDD and DRHA
	Mainstreaming climate change in the budgeting process	MEDD, MHA, MDR (Programming Directorates) and Target Communes
	Mainstreaming climate change in the monitoring-evaluation system	MEDD, MHA, MDR (Programming Directorates) and Target Communes
Sustainable Land Management	What is SLM and what are its benefits?	MEDD, MHA, MDR DREDD, DRHA & local population
	SLM best practices	MEDD, MHA, MDR DREDD, DRHA & local population
	Relationship between SLM and CC adaptation	MEDD, MHA, MDR DREDD, DRHA and local population
Training on Environmental monitoring	Vegetation Mapping	MEDD, MHA, DREDD and DRHA
	Inventory of flora	MEDD, MHA, MDR DREDD and DRHA
	Water Monitoring	MEDD, MHA, MDR DREDD and DRHA
	Introduction to Remote Sensing	MEDD, MHA, MDR DREDD and DRHA
Training / IEC	Establishment of a PES mechanism, Policy Dialogue	DREDD, DRDR, DRHA, Natural Resource Management Association

IV. PAYMENT FOR ENVIRONMENTAL SERVICES (PES)

4.1. Relevance of PES to REVUWI

What environmental services are provided?

Today, four types of environmental services are targeted by the PES: biodiversity preservation; water resources protection; landscape preservation and carbon sequestration. Regarding carbon sequestration, although its expected benefits and the very understanding of the carbon market mechanism by Mauritanians are a bit remote, that is not the case with the other three forms for which transactions are already visible through grazing.

Collateral Benefits

In addition to environmental benefits, PES has collateral benefits: (i) Source of employment for unemployed graduates; (ii) a role in the fight against poverty by providing a new source of work and income to poor farmers, "service producers".

4.2. PES Implementation

PES implementation requires **policy dialogue** where a moderator (intermediary in the graph) will agree with users, including nomads or transhumant breeders and service providers on a common meeting schedule. The goal is to get all the parties to agree on the environmental service transaction. While the meeting schedule may not be a problem for the service provider who is stable and resident at the site, the same is not true for the nomad who has control neither over his time nor the transhumance corridor. The moderator will demonstrate good knowledge of the transhumance schedules and corridors as well as the herding mode in order to facilitate negotiations and reconciliations.

Knowledge by the moderator of the nutritive value of herbaceous species, their development and enhancement mode will help the provider to further assess the market value and sustainable management of his/her product. To the user, the moderator brings real-time information on the characteristics of livestock-hosting sites, thereby sparing him/her the pain of traveling and eases his/her task of seeking a path, which he/she does every year to determine which corridor his/her shepherd (and livestock) should take.

The moderator has an important role to play in this policy dialogue and he/she, beyond the technical aspects related to the environmental product or service to be managed and the legal aspects governing natural resources, must be an astute negotiator to ensure the transaction succeeds and to formalize it to the satisfaction of both parties.

The moderator's role is crucial in this process which deals with multi-dimensional sensitivities (cultural and economic). It could be much more beneficial to hire an international NGO.

This mechanism entails a major risk but it will be crucial. It is undoubtedly the only way to sustainably manage natural resources given the increasingly erratic climate and a growing animal population.

V. BIOSPHERE RESERVE PROMOTION IN EL ATHEF ECOSYSTEM

El Athef is one of the country's largest grazing reserves and the most endowed during droughts. But successive droughts in the 1970s and 1980s, exacerbated by human activities, have caused widespread degradation of pastoral and forest resources. This area is currently characterized by: (i) a relatively large woodland grazing potential which is overexploited by the massive influx of transhumant animals; (ii) a unique biotope in Mauritania; and (iii) the existence on its periphery (including on the Senegal River’s other bank) of a very poor population which derives most of its livelihoods from the exploitation of the natural resources of the area (wood and pastoral resources). Despite all these factors which contribute to its degradation, El Athef still has a self-regenerating capacity to ensure the conservation of its natural capital and improve sustainable livelihoods of people living in its immediate vicinity and transhumant breeders who visit it during lean periods.

The idea of creating a biosphere reserve in this area using an ecosystem approach is to enhance the resilience of the environment and that of people living nearby. This is a new and innovative concept which is also requested by the Environment and Sustainable Development Minister, The Nature Conservation / MEDD Director and the Gorgol Regional Delegate of Environment and Sustainable Development (DREDD), supported by regional administrative authorities (Gorgol's Wali and local elected officials). The area has been subject of several studies but it has never been proposed as a biosphere area; this proposal was made by the project formulation team.

What is being sought is the recognition of El Athef's biosphere reserve status by the UNESCO programme which substantially supports biosphere reserves with the capacity to play three basic roles simultaneously - both complementary and interactive - which are today provided by El Athef: (i) Conservation role: to ensure the conservation of landscapes, ecosystems, species and genetic variation; (ii) Development role: to foster economic and human development while respecting socio-cultural and environmental peculiarities; and (iii) a logistic support role to buttress and encourage research, education, training and monitoring related to local, national and global activities aimed at sustainable conservation and development. To play its three complementary roles, the biosphere reserve must include three interdependent areas: (i) one (or more) central area(s) which should have a legal status guaranteeing the long-term protection of landscapes, ecosystems and the species they hosts; this area acts as a lung which feeds and sustains the rest of the reserve (hence the prefix "bio"). It must be large enough to meet conservation objectives; (ii) a buffer zone (or area) surrounding the central area next to it and the boundaries of which must be clearly defined. Activities conducted in this area should not go against the conservation and key role assigned to the central area; but should instead help to protect it (hence the term "sphere"); and (iii) a crown serving as a transition area (external); this so-called cooperation area which extends beyond the biosphere reserve is the ecosystem's showcase and food source around which subsistence activities (agricultural, pastoral, human settlements, etc.) revolve. This is where the local population, conservation agencies, scientists, associations, cultural groups, private companies and other stakeholders need to work together to clean, replant, maintain, manage the ecosystem's resources sustainably for the benefit of those who depend on it for their subsistence.

The biosphere reserve concept has the advantage of not being restrictive; it is the outcome of a consensus developed between the local population, natural resource users (indigenous and non-indigenous), local administrative and municipal authorities, and the technical services responsible for natural resources management and overall supervision.

The consensus will be reached by sensitizing all stakeholders, which would lead to the acceptance of zoning (as shown above) and the preparation of a rating form[41] to be submitted to the central authority for filing, and later to UNESCO's MAB office for inclusion in the list of World Network of Biosphere Reserves. Ultimately, the goal is to find an internationally recognized status for this ecosystem to mobilize more funding capable of enhancing its climate-change resilience which national mechanisms alone cannot accomplish.

REVUWI alone, given its three-year life-cycle, cannot ensure the process' success which culminates in its registration with MAB; but it can facilitate and achieve consensus among indigenous communities regarding their ownership. The expected outcome is estimated at a minimum of 10% of the entire process but it will lay the foundation of the process. This will be an innovative pilot activity of the project which will be crucial to the success of the overall operation.

The project will not be a pioneer because the Djoudj trans-boundary biosphere area (Senegal) - Diawling (on the Mauritania side) is there to provide enough lessons to the Mauritanian authorities who participated in its establishment. The Government will call upon the same authorities to contribute to the El Athef pilot project which will be located in the country and will involve only indigenous people.

[41] *The nomination form is published by UNESCO. It highlights ecological and biological interest, as well as the site's socio-economic importance. It includes, among other things, a list of criteria that must be met for a site to be classified as a Biosphere Reserve.*

The budget allocated for this project activity will cover the costs of sensitization, administrative approaches to be adopted by the communities, consultation meetings or workshops and for conducting additional studies, if necessary. This activity involves several actors (administrative and municipal authorities, MEDD technical services, local communities and NGOs) and its implementation will be entrusted to an international NGO which will provide sufficient proof of competence and conditions for successful implementation.

VI. POLICY DIALOGUE AS A TOOL FOR ADVOCATING AND COMMUNICATING ADAPTATION TO CLIMATE CHANGE

6.1. Importance of Policy Dialogue

Policy dialogue is a communication mechanism that facilitates the narrowing of the positions of the two stakeholders that were not necessarily agreeing in the beginning. Policy dialogue aims at coming up with a vision or reaching a consensus on shared resources/vision. In this case, natural resources are shared goods for communities living permanently in their immediate vicinity and those who live there temporarily. These natural resource users can be individuals from settled communities or transhumant nomads. At the start of the project, staff and partners involved in its implementation must understand the objectives, target groups and areas, as well as project intervention modalities to ensure good communication.

6.2. Policy Dialogue within the Framework of the Project

Regarding support to the participatory policy dialogue processes among the various actors involved, the project's contribution will present as a precondition, the placement of climate change at the heart of the process so that Component One’s capacity building programme can be beneficial to everyone at all levels. The tool will focus on activities for the sustainable management of water infrastructure, pastoral and forest resources of restored wetlands and biosphere reserve. It will also enable stakeholders, who are in charge of managing natural resources, to take stock of the opportunities and challenges, on the one hand, and the consensus-building approach which should be given priority, on the other hand, to ensure the sustainability of project activities and ownership of outcomes by beneficiaries, environmental service providers and users.

6.3. Policy Dialogue Implementation

To build a policy dialogue culture among project stakeholders, experienced service providers will be recruited. The implementation of this policy dialogue will include a phase on the dissemination of knowledge on the project area and target population by (i) establishing direct contact with all the parties; and (ii) sensitizing and explaining in detail, the various innovative concepts to ensure their ownership. The next phase will involve adopting approaches to facilitate the emergence of consensual and mutually-agreeable solutions between parties who initially held divergent points of view. These service providers will assist the project to identify the best ways of promoting harmony on concerted and consensual management of shared natural resources in the most optimal and efficient manner. The issues requiring policy dialogue include all innovative technological concepts such as integrated wetlands management, creation of a biosphere reserve and testing of the Payment for Environmental Services (PES) concept.

VII. SOLAR COOKERS AND IMPROVED STOVES IN THE NEIGHBORHOOD OF FOREST AND PASTORAL AREAS (9400 units).

The aim of introducing solar cookers and improved stoves is to reduce the pressure on forests and woodlands in one hand and rangelands on the other while improving the quality of life for the people in the area covered by the project. The measures to be implemented will enable to:

- Reduce wood consumption;
- Reduce the destruction of forests;
- Increase the incomes of the poorest households;

- Improving the health of targeted communities (fewer cases of burns, respiratory and eye diseases) and release free time for women in particular;
- Reduce emissions of carbon monoxide and thus help mitigate global warming;
- Contribute to the fight against unemployment.

Local associations of local natural resource management (AGLC) will provide a framework for the implementation and monitoring of the envisaged interventions as to ensure sustainability. Local agreements will be established with the AGLC which will manage the project grants and the craftsmen who will be trained for making the improved stoves. Ultimately, the goal is to empower local artisans and secure the revolving fund to be used for the beneficiary community in their various needs for managing natural resources while diversifying their livelihoods to climate change.

Upstream, activities of training / awareness on improved stoves will be developed for an efficiency of actions to be executed. In this context, according to various surveys conducted since 1990, the final energy consumption in the residential sector is mainly dominated by wood fuels (87.2%) in 1999. Share of wood and charcoal were then respectively 59.5% and 27.7%. This explains why the importance of wood fuel consumption is a danger to the country, to the extent of deforestation, following the indiscriminate exploitation of forest formations for the production of firewood and charcoal, has environmental consequences that have not yet been measured accurately. The timber and charcoal remains predominant despite the real risks outlined above. This reduces the resilience of the forests to climate change. Artisans' training and awareness on the use of improved stoves as a solution to reduce pressure on wood resources will rationalize the use of wood energy while increasing the capacity of forest resilience. The budget for this activity covers the cost of training the artisans, organizing workshops to sensitize households and demonstration sessions for the introduction of improved household stoves.

Artisans' training and public awareness will include aspects related to cost recovery for sustainability support. It will include establishing GIE (economic interest groups) and sales channels of improved stoves. These GIE could be craftsmen or women's groups or even mixed groups (men, women and youth). This activity will be carried out by two NGOs, one in charge of training and awareness, and the other for the creation of a joint venture and the establishment of a system of cost recovery.

The implementation of these activities may involve the DPN (Direction de la Protection de la Nature) in MEDD, DREDD, local forestry cooperatives, local craftsmen.