



# PROJECT IDENTIFICATION FORM (PIF)

**PROJECT TYPE:** Full-sized Project  
**TYPE OF TRUST FUND:** LDCF

## PART I: PROJECT INFORMATION

Project Title:	Development of an improved and innovative delivery system for climate resilient livelihoods in Mauritania.		
Country(ies):	Mauritania	GEF Project ID: <sup>1</sup>	5580
GEF Agency(ies):	UNEP	GEF Agency Project ID:	1159
Other Executing Partner(s):	Ministry of Environment and Sustainable Development (MDEDD)	Submission Date:	30/07/2013
		Resubmission Date:	23/10/2013
			13/11/2013
GEF Focal Area (s):	Climate Change	Project Duration(Months)	48
Name of parent programme (if applicable):		Agency Fee (US\$):	475,000

### A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK:

<i>Focal Area Objectives</i>	<i>Trust Fund</i>	<i>Indicative Grant Financing (\$)</i>	<i>Indicative Co-financing (\$)</i>
<b>CCA_1 Reducing Vulnerability:</b> Outcome 1.3	LDCF	650,000	1,547,000
<b>CCA-2 Increasing Adaptive Capacity:</b> Outcome 2.3	LDCF	1,852,500	4,408,950
<b>CCA-3 Adaptation Technology Transfer:</b> Outcome 3.1	LDCF	2,497,500	5,944,050
Total project costs		5,000,000	11,900,000

### B. INDICATIVE PROJECT FRAMEWORK

**Project Objective:** To increase the climate resilience of local communities in rangelands of the Sahelian Acacia Savannah Ecoregion by strengthening institutional and technical capacity within the national and local government to implement EbA measures.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
1. Adaptive capacity of national and local government to address climate change risks through an EbA approach in rangeland areas.	TA	1. Strengthened national and local adaptive capacity of government to address climate change risks through an EbA approach in rangeland areas.	1.1 Improved and innovative governance mechanism, to enable national and local government to deliver climate resilient livelihood options to local communities.  1.2 Technical capacity of national and local government developed to facilitate the implementation of appropriate EbA measures to build climate resilient livelihoods of local communities in rangelands.  1.3 Strengthened AGLCs in Hodh El Gharbi, Guidimakha and Gorgol Wilayas	LDCF	1,425,000	3,430,000

<sup>1</sup> Project ID numbers will be assigned by GEFSEC.

			<p>technically trained on implementation of EbA measures.</p> <p>1.4 AGLCs established in rangeland areas of Hodh El Gharbi, Assaba, Brakna and Trarza Wilayas, and committee members trained on implementation of EbA measures.</p> <p>1.5 Strategy to upscale, sustain and replicate measures to build climate resilient livelihoods – based on an EbA approach – institutionalized within government.</p>			
2. Climate resilient livelihoods for rural communities based on EbA measures in rangelands in seven Wilayas in the Sahelian Acacia Savannah Ecoregion.	INV	2. Increased ecosystem resilience for the provision of ecosystem services and climate resilient livelihoods via an EbA approach.	<p>2.1 AGLC management plans strengthened using a consultative process, including community/ecosystem maps to identify rangelands, degraded ecosystems, preferred EbA measures and alternative livelihood opportunities.</p> <p>2.2 AGLC members and local communities trained on implementation of improved fire management techniques using an EbA approach. This will include the establishment of fire management technical committees and pilot field schools to demonstrate the benefits of EbA to local communities in surrounding Moughataas.</p> <p>2.3 AGLC members and local communities trained on implementation of improved soil restoration techniques using an EbA approach. This will include the establishment of pilot field schools to demonstrate the benefits to local communities in surrounding Moughataas.</p> <p>2.4 Alternative livelihood strategies developed, based on community needs and EbA measures implemented through outputs 2.2 and 2.3.</p>	LDCF	2,600,000	6,280,000
3. Awareness	TA	3. Increased	3.1 Communication outreach	LDCF	750,000	1,714,000

and knowledge of EbA and climate resilient livelihoods in the context of pastoralism and rangelands.		awareness of climate change risks, advantages of EbA and benefits of more climate resilient rangelands.	strategy developed for government staff and local communities, including a media campaign to increase awareness of the benefits of an EbA approach and associated climate resilient livelihoods.  3.2 EbA rangeland guidelines developed for technical government departments, policy makers and local communities.  3.3 Existing government web-based platform strengthened to allow sharing of EbA-relevant information amongst government and NGO staff, and access to project products, including databases, activities, technical reports, guidelines and handbooks.  3.4 Long-term monitoring plan established and initiated in collaboration with local research institutes and universities to evaluate the performance and cost-effectiveness of the EbA measures implemented through Component 2.			
Sub-Total				4,775,000		11,424,000
Project management cost ( PMC)				225,000		476,000
Total project costs				5,000,000		11,900,000

**C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)**

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
National Government	Ministry of Environment and Sustainable Development (MDEDD)	In kind	6,400,000
National Government	National budget co-financing	In cash	5,000,000
GEF Agency	United Nation Environment Programme (UNEP)	Grant	500,000
<b>Total Co-financing</b>			<b>11,900,000</b>

**D. INDICATIVE TRUST FUND RESOURCES (\$) REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>**

GEF Agency	Type of Trust Fund	Focal area	Country Name/Global	Grant amount (\$) (a)	Agency Fee (\$) (b) <sup>2</sup>	Total (\$) (a + b)
NA						

<b>Total Grant Resources</b>			

<sup>1</sup> 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.

<sup>2</sup> Indicate fees related to this project

## E. PROJECT PREPARATION GRANT (PPG)

	<u>Amount Requested (\$)</u>	<u>Agency Fee for PPG (\$)</u>
• No PPG required	_____	_____
• (up to) \$50k for projects up to and including \$1 million	_____	_____
• (up to) \$100k for projects up to and including \$3 million	_____	_____
• (up to) \$150k for projects up to and including \$6 million	US\$ 100,000	US\$ 9,500
• (up to) \$200k for projects up to and including \$10 million	_____	_____
• (up to) \$300k for projects above \$10 million	_____	_____

## PPG AMOUNT REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES) FOR MFA AND/OR MTF PROJECT ONLY

GEF Agency	Type of Trust Fund	Focal area	Country Name/Global	(in \$)		
				PPG (a)	Agency Fee (b)	Total c = a + b
N/A						
<b>Total PPG Amount</b>						

MFA: Multi-focal area projects; Multi-Trust Fund projects.

## PART II: PROJECT JUSTIFICATION

### A. PROJECT OVERVIEW

#### A.1 Project Description

##### *A.1.1. The project problem, root causes and barriers that need to be addressed*

Mauritania has a population of 3,542,000 people, most of whom live in the south of the country<sup>2</sup> near the Senegal River valley within the Sahelian Acacia Savannah Ecoregion<sup>3</sup> (see Annex I). This region is particularly important to local communities for livestock herding and crop farming. Historically, livestock herding has been a very important economic activity in Mauritania and it currently comprises about 15% of national Gross Domestic Product (GDP) and 80% of the agricultural GDP<sup>4</sup>. In addition to providing soil, water and grazing, the Sahelian Acacia Savannah provides a number of other ecosystem services that benefit local communities in rangelands. These services include: i) provisioning services such as fuelwood, wild foods and medicinal plants; ii) cultural and social services such as recreation and tourism; iii) regulating services such as pollination, waste decomposition and air/water purification; and iv) support services such as nutrient cycling and soil accretion.

Agriculture in Mauritania is extremely constrained by aridity. Land suitable for livestock and crops covers 397,110 km<sup>2</sup> and irrigable land is estimated to cover only 2,500 km<sup>2</sup> of Mauritania's 1,030,700

<sup>2</sup> Mauritania: Population Density, 2000. Gridded Population of the World (GPW), v3 Available from: <http://sedac.ciesin.columbia.edu/downloads/maps/gpw-v3/gpw-v3-population-density/mrtdens.jpg>.

<sup>3</sup> Sahelian Acacia Savannah. See: <http://worldwildlife.org/ecoregions/at0713> and [http://www.eoearth.org/article/Sahelian\\_Acacia\\_Savannah?topic=49597](http://www.eoearth.org/article/Sahelian_Acacia_Savannah?topic=49597).

<sup>4</sup> Livestock and regional market in the Sahel and West Africa: potentials and challenges. Available from: <http://www.oecd.org/swac/publications/41848366.pdf>.

km<sup>2</sup>.<sup>5</sup> The Senegal River valley in Mauritania – covering 75,500 km<sup>2</sup> with a population density of 10-20 people per km<sup>2</sup> – includes the majority (1,360 km<sup>2</sup>) of this irrigable land. Regarding rangelands, Mauritania has a grazing carrying capacity of about 1,500,000 - 2,500,000 Livestock Standard Units (LSUs). However, the demand for livestock is much greater than the carrying capacity exceeding it by about 2,000,000 LSUs. The relatively reliable 400-600 mm of rainfall per annum in the Senegal River valley supports cattle herding and irrigated crops are farmed in the flood plains. In the Sahel region, away from the Senegal River and thus a permanent water source, farmers and herders are vulnerable to rainfall variability and have been negatively impacted by prolonged and severe droughts.

A rapidly growing population<sup>6</sup> has led to overexploitation of the Sahelian Acacia Savannah in Mauritania as a result of: i) expansion of agricultural land and human settlements; ii) overgrazing; iii) overharvesting of fuel wood; iv) excessive burning of rangeland; and v) soil erosion<sup>7</sup>. In addition, desertification because of drought continues to be a problem in the region. These threats are likely to lead to future loss or damage to the Sahelian Acacia Savannah vegetation which will decrease the amount of benefits from this ecosystem accruing to local communities in rangelands. These environmental threats are exacerbated by observed climate variability and changes. For example, bushfires are a substantial problem in rangelands in Mauritania<sup>8,9</sup>. Every year 100-165 bush fires – burning an area of greater than 0.5 ha – destroy roughly 400,000 ha of forest/rangeland<sup>10</sup>. In 2007, bush fires destroyed 905,564 ha<sup>11</sup> – this represents ~2% of the land suitable for livestock and crops<sup>12</sup>. This baseline problem is seen a significant threat to Mauritanian ecosystems and community livelihoods, and is considered among the nine major disasters prioritised by the Mauritania National Action Plan for Disaster Risk Management (PAN-GRC).

The effects of fire on soil productivity in Sahelian rangelands, and consequently on community livelihoods that are dependent on pastoralism, are well documented<sup>13</sup>. Fire volatilizes organic nitrogen compounds, and the excessive leaching of soils during the rainy season results in the loss of salts from the ashes of the burned grass and burned animal manure. The results of bush fires in the Sahel are a reduction and simplification of vegetation, soil depletion through losses of nitrogen, reduced nutrient cycling through deep-rooted trees and shrubs, and critical breakdowns in soil ecology. This in turn characteristically results in the overgrazing of the perennial grasses, a further reduction of biological productivity, and declining carrying capacity. Furthermore, frequent fires increase the tendency of soil to crust. This crusting promotes runoff and therefore results in a drier soil climate and sparser vegetation that promotes mechanical dispersion of clay through raindrop impact and decreases soil organic matter. Crusting also removes salts – this in turn creates a negative feedback loop that further promotes clay dispersion and crusting<sup>14</sup>. This resultant loss of soil productivity contributes to the chronic food and nutritional insecurities experienced in the Sahel. In Mauritania, according to the nationwide study conducted in December 2011, 24.6% of rural households (about 700,000 people) in six of the country's 13 regions (Hodh El-Chargui, Hodh el-Gharbi, Tagant, Assaba, Gorgol, Guidimakha) are food insecure. More than half of these households (12.9%) have insufficient food intake<sup>15</sup>.

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<sup>5</sup> See: <http://data.worldbank.org/topic/agriculture-and-rural-development>.

<sup>6</sup> Population growth is 2.29% in Mauritania: <https://www.cia.gov/library/publications/the-world-factbook/geos/mr.html>.

<sup>7</sup> Sahelian Acacia Savannah. See: <http://worldwildlife.org/ecoregions/at0713>.

<sup>8</sup> Direction Protection de la Nature. 2011. Programme National de Protection des pâturages et de lutte contre les feux de brousse (2010-2011). Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>9</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>10</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>11</sup> Bruzon, V., Blinker, L.R. Bleu, D. & Bruny I. 2013. Profil Environnemental de la Mauritanie: Rapport Final Provisoire. Contrat cadre BENEf 2009 - EuropeAid/127054/C/SER/Multi Lot 6: Environnement.

<sup>12</sup> World Bank. 2008. Mauritania: Environment at a Glance. World Development Indicators, World Bank: Washington DC. See: [www.worldbank.org/environment/data](http://www.worldbank.org/environment/data).

<sup>13</sup> National Research Council. 1983. Environmental Change in the West African Sahel. National Academy Press, Washington, C.C.

<sup>14</sup> Mills, A.J. & Fey, M.V. 2004. Frequent fires intensify soil crusting: physicochemical feedback in the pedoderm of long-term burn experiments in South Africa. *Geoderma* (121), 45–64 pp.

<sup>15</sup> Food Security and Nutrition Working Group. 2012. Strategic Document Version 2: Response plan addressing the food and nutrition crisis in the Sahel. Inter Agency Standing Committee (IASC), Dakar.

Since 1960, the climate in Mauritania has become progressively more arid and the desert region has extended by 150 000 km<sup>2</sup><sup>16,17</sup>. The main climate changes that have been observed over the past five decades are: i) increases in the frequency of intense rainfall<sup>18</sup> events leading to flash floods; ii) declines in low-intensity, long-duration precipitation events leading to extended dry spells; iii) a 0.9 °C increase in average annual temperature<sup>19</sup>; and iv) a resulting southward shift of climatic regions including near desert conditions being found near the Senegal River. Increased desertification has already had marked negative effects on livestock herding throughout Mauritania. In the 1970s and 1980s, for example, drier conditions caused rural nomadic herding communities to settle near oases or migrate to urban areas. Consequently, there were substantial declines in meat production across the country and considerable losses in income for livestock herders.

More frequent and severe droughts are expected in the future in Mauritania, with further increases in mean annual temperature and decreases in mean annual precipitation<sup>20</sup>. In addition, flash floods are predicted to increase in frequency. The predicted intensification of the current climatic trends in the Sahelian Acacia Savannah Ecoregion will lead to: i) reduced overall productivity of rangelands and a likely change in composition and nature of pastures; ii) reduced viability of rain-fed crops (dates, millet, sorghum, rice and corn); iii) increased rates of soil water evaporation and plant transpiration; iv) increased soil erosion as a result of dry soils, lack of plant cover and high intensity rainfall events; v) southward migration of nomadic livestock herders as a result of reduced quality of grazing in the north, and increase sedentarization of pastoral communities, which in turn will increase land degradation and erosion in the south, and disruption of traditionally viable mobility patterns and accords between pastoral groups; vi) reduced stream flows, lowering of water tables and reduced water storage; vii) reduced availability of clean drinking water and irrigation water; viii) damage to infrastructure and loss of life from flooding; ix) increased incidence of water-borne diseases such as cholera, typhoid and diarrhoea, and changing patterns of livestock related diseases; x) changing or widening distribution of temperature-linked vector-borne diseases like malaria and leishmaniasis; xi) increased incidence of malnutrition for both humans and livestock; xii) reduced or erratic generation of hydro-electricity from the Manantali Dam in Mali; xiii) reduced availability of wood to meet domestic energy needs; xiv) increased competition and travelling distances for food, water and firewood; and xv) increased frequency and intensity of bush fires. The link between climate change and increased frequency and intensity of fires is well-established in the scientific literature<sup>21,22, 23</sup>. These trends and projections of climate and fire responses suggest new strategies to adapt to the increased occurrence of fire are needed to sustain forest and rangeland landscapes<sup>24</sup>. In the Sahel region in general and in Mauritania specifically, bush fires are expected to become a more serious

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<sup>16</sup> Boko, M., I. Niang, A. Nyong, C. Vogel, A. Githeko, M. Medany, B. Osman-Elasha, R. Tabo and P. Yanda, 2007: Africa. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge UK, 433-467.

<sup>17</sup> OECD2006. The ecologically vulnerable zones of Sahelian Countries. Atlas on regional integration in West Africa. Available from: <http://www.oecd.org/swac/publications/38409502.pdf>.

<sup>18</sup> <sup>18</sup> Boko, M., I. Niang, A. Nyong, C. Vogel, A. Githeko, M. Medany, B. Osman-Elasha, R. Tabo and P. Yanda, 2007: Africa. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge UK, 433-467.

<sup>19</sup> Hulme, M., Doherty, R., Ngara, T., New, M. And Lister, D. 2001. African Climate Change: 1900 – 2100. Climate Research Vol 17: 145-168.

<sup>20</sup> Boko, M., I. Niang, A. Nyong, C. Vogel, A. Githeko, M. Medany, B. Osman-Elasha, R. Tabo and P. Yanda, 2007: Africa. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge UK, 433-467.

<sup>21</sup> IPCC. 2012. Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.

<sup>22</sup> Stephens, S. L., Agee, J.K., Fulé, P.Z., North, M.P., Romme, W.H., Swetnam, T.W. & Turner., M.G. 2013. Managing Forests and Fire in Changing Climates. Science, Vol. 342, 41-42 pp.

<sup>23</sup> Dale, V.H., Joyce, L.A., McNulty, S., Neilson, R.P., Ayres, M.P., Flannigan, M.D., Hanson, P.J., Irland, L.C., Lugo, A.E., Petterson, C.J., Simberloff, D., Swanson, F.J., Stocks, B.J. & Wotton, B.M. 2001. Climate Change and Forest Disturbances. BioScience, Vol. 51 No. 9, 723-734 pp.

<sup>24</sup> Stephens, S. L., Agee, J.K., Fulé, P.Z., North, M.P., Romme, W.H., Swetnam, T.W. & Turner., M.G. 2013. Managing Forests and Fire in Changing Climates. Science, Vol. 342, 41-42 pp.

threat under conditions of climate change<sup>25</sup>. This is because: i) intense rainfall events are likely to lead to spurts of vegetation growth increasing the fuel load; and ii) increasing temperatures will lead to drier fuel loads, easier and therefore more frequent ignition and more intense burns<sup>26</sup>. These more frequent and more intense burns will exacerbate the native feedback loops described in earlier, resulting in loss of soil productivity and lowered livestock carrying capacity, both of which will exacerbate the food insecurities currently experienced.

The **problem** that this project seeks to address is that livelihoods of local communities living in the Sahelian Acacia Savannah rangelands are already threatened by desertification and wild fires<sup>27</sup>, impacts of which are expected to intensify under projected climate change. Mobility of livestock, which has been proven to be an effective resilience measure to both current variability and future climate change, is increasingly constrained by land use changes. Local communities do not have the capacity or institutions to address these threats. Furthermore, the ongoing development investments made by government and donors in the project region will be undermined if climate change risks are not integrated into the planning and implementation of development measures. Urgent interventions are needed to build capacity to develop alternative livelihoods and increase the awareness of communities living in rangelands on how to adapt their production systems to climate change.

The **solution** to the problem that this project seeks to address is to enhance the climate resilience of local communities living in the Sahelian Acacia Savannah rangelands by capacitating national and local (Wilaya) government to implement ecosystem-based adaptation (EbA) approaches. Such approaches provide a low-cost and effective means for securing and enhancing multiple ecosystem benefits for vulnerable pastoral communities. As part of an integrated adaptation approach, EbA has been shown to require comparatively small investments relative to the long-term social, economic and environmental benefits<sup>28,29</sup>. The package of EbA interventions implemented through this project will address a range of NAPA priorities as detailed in Section B.1.

Significant **barriers** to achieving the implementation of EbA exist in the country, including: i) limited institutional and technical capacity of national and local government to support local communities and implement EbA in rangelands; ii) insufficient demonstration of the success of alternative livelihood options for sustainable pastoralism and EbA measures; and iii) limited understanding of climate-resilient livelihood strategies at all levels of government.

The project will contribute to overcoming these barriers by: i) building institutional and technical capacity to support local communities in planning and implementing EbA; ii) demonstrating the socio-economic and environmental value of EbA and EbA-based alternative livelihoods and sustainable pastoral systems; and iii) increasing awareness of the benefits of EbA and associated climate-resilient livelihoods.

The implementation of EbA interventions will generate lessons learned regarding appropriate EbA measures and alternative livelihoods in specific agro-ecological and socio-economic environments within Mauritania. The dissemination of these lessons learned, public education and outreach initiatives will ensure ongoing and effective knowledge exchange. Local communities will benefit substantially from: i) integration of EbA into government development programmes; ii) the improved capacity of Mauritania's government to assist communities in planning and implementing EbA; and

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<sup>25</sup> Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable. 2008. Seconde Communication Nationale sur les Changements Climatiques.

<sup>26</sup> Direction Protection de la Nature. 2011. Programme National de Protection des pâturages et de lutte contre les feux de brousse (2010-2011). Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>27</sup> Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable. 2008. Seconde Communication Nationale sur les Changements Climatiques.

<sup>28</sup> Jones, H.P., Hole, D.G. & Zavaleta, E.S. 2012. Harnessing nature to help people adapt to climate change. *Nature Climate Change* 2, 504-509.

<sup>29</sup> UNEP/STREP 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji: Synthesis Report.

iii) new livelihood and improved capacity to manage the effects of climate change on in their Sahelian Acacia Savannah rangelands.

#### *A.1.2 The baseline scenario and associated baseline projects*

Livestock farming is an important agricultural activity in Mauritania providing livelihoods to many local communities. However, widespread soil degradation, desertification and frequent fires<sup>30</sup> are reducing the availability of high quality grazing land. Climate change impacts, including an increased frequency of drought and flash floods, are exacerbating these negative effects. Climate change impacts are also negatively affecting the ability of natural systems to deliver ecosystem services – such as provision of water, food, fuelwood and medicinal plants – which many rural communities depend upon. There is consequently a need to protect the livelihoods of rural communities by managing fire and natural resources in a sustainable manner..

In response to the baseline threat of bush fires to Mauritanian ecosystems and community livelihoods, the **Country Annual Programme to Combat Bush Fires (APCBF)**<sup>31</sup> was developed. The APCBF is part of the annual activities of the MDEDD and represents the baseline initiative for the LDCF project. The project began in 2011 and will continue until 2015, with an annual budget of approximately US\$ 1,600,000 supplied by the government of Mauritania. The aim of the APCBF is to protect rangelands against bush fires. The specific objectives of the project are to: i) ensure that farmers have access to the necessary rangelands for the well-being of their livestock; ii) secure strategic rangeland reserves across the country; and iii) protect and conserve biodiversity. These objectives are achieved through the implementation of preventative measures such as the creation of firebreaks, and through fire fighting actions. Every year before the start of the dry season, employees from the MDEDD measure grass cover in each region. In collaboration with local communities, a fire management plan is developed and firebreaks are mapped and created through clearing vegetation and burning. Communities are then supplied with emergency equipment to combat any fires that do occur. The APCBF is also implementing a national awareness campaign on bushfires and how to prevent them. The programme is currently active in 7 Wilayas<sup>32</sup>, namely Hodh El Chargui, Hodh El Gharbi, Assaba, Guidimakha, Gorgol, Brakna and Trarza.

Climate change, including changes in temperature and precipitation amounts, will negatively affect the activities of the APCBF. Specifically, a predicted decrease in annual rainfall, combined with an increase in annual temperatures, will lead to an increase in fire frequency and intensity throughout the APCBF project area<sup>33</sup>. The current budgetary constraints and limited capacity of the APCBF will severely limit their capacity to cope with more frequent fires. The LDCF project will reduce the APCBF's vulnerability to climate change by introducing EbA interventions to manage fires as part of a broader EbA approach to enhancing climate resilience of local communities living in rangelands. These EbA approaches will include the establishment of green fire breaks and innovative measures to control fires. Current best practice and scientifically rigorous information will be used to inform the introduction of EbA approaches and changes to the current fire management strategy. Furthermore, the LDCF project will increase the technical and institutional capacity of the MDEDD, thereby strengthening their ability to plan and implement climate-resilient fire management strategies. Knowledge generated through the LDCF project activities will be disseminated to local communities, which will increase their awareness and understanding of climate change and fire thereby reducing their vulnerability to these threats. For more details see Table 1 in Annex II.

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<sup>30</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>31</sup> Direction Protection de la Nature. 2011. Programme National de Protection des pâturages et de lutte contre les feux de brousse (2010-2011). Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>32</sup> There are 13 Wilayas in Mauritania. See Annex I.

<sup>33</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

Although not considered as a baseline project, the LDCF project will also build on the community-based institutional arrangements established by the MDEDD and its project partners. The MDEDD has established decentralised public institutional structures *Delegation Regionale de l'Environnement et du Developpement Durable (DREDD)* that are responsible for environmental protection and sustainable development within their designated local area. There is a DREDD in every Wilaya that acts as a representative of the central government. In addition, the presence of “*Local Collective Management Associations*” (AGLCs)<sup>34</sup> in the project area will be beneficial to the project. AGLCs are community-based organizations responsible for the sustainable management of natural resources within their designated local area. A total of 40 AGLCs have been established thus far in the Hodh El Gharbi (12), Guidimakha (25) and Gorgol (3) regions. These community organisations have little experience addressing the problems associated with bush-fires.

Climate change impacts such as more frequent and severe droughts and more frequent flash floods are expected to negatively affect the resilience of community managed lands. Droughts increase water stress and reduce grazing availability, while flash floods lead to increased erosion and the loss of natural vegetation, negatively impacting on the ability of local communities to sustainably manage natural resources. Furthermore, a predicted decrease in annual rainfall, combined with an increase in annual temperatures, will lead to an increase in fire frequency in the DREDD- and AGLC-managed rangelands<sup>35</sup>. Frequent fires will: i) decrease the availability of fodder, negatively affecting livestock productivity; ii) decrease vegetation cover leading to increased erosion and desertification; and iii) reduce woody biomass, negatively impacting community livelihoods that rely on charcoal production and the availability of fuelwood. The LDCF project will build on the current activities of existing AGLCs in particular by introducing a range of EbA interventions, including EbA approaches to fire management and soil restoration. In addition, the LDCF project will establish AGLCs in regions where they are not currently included, and train them in the use of site-specific EbA interventions. Communities will have an increased awareness and knowledge of climate change and EbA approaches as a result of the LDCF project, and thus will be less vulnerable to climate change impacts. The LDCF project will also use the AGLC and DREDD network to strengthen technical and institutional capacity of national and local government which will equip officials to better manage natural resources under climate change conditions.

### *A.1.3 The proposed alternative scenario*

The LDCF project aims ***to increase the climate resilience of local communities in rangelands of the Sahelian Acacia Savannah Ecoregion by strengthening institutional and technical capacity within the national and local government to implement EbA measures***. The project will be implemented in the Wilayas<sup>36</sup> of Hodh El Chargui, Hodh El Gharbi, Assaba, Guidimaka, Gorgol, Brakna and Traraza. AGLCs will be strengthened and, where required, established. In collaboration with MDEDD Inspectors and Forestry Guards at the Moughataa and Commune levels, the AGLCs will facilitate the implementation of community-based adaptation actions as part of a broad package of EbA interventions designed to build the climate resilience of local communities. The project will strengthen national and local government’s technical EbA knowledge and ability to interact with stakeholders at the national municipal and individual level, which will ensure local level consultation and engagement in building the climate resilience of vulnerable, rural communities.

Major project components will include:

### **Component 1: Adaptive capacity of national and local government to address climate change risks through an EbA approach in rangeland areas.**

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<sup>34</sup> These community-based organizations have been established in association with the Programme Gestion de Ressources Naturelles (ProGRN) implemented by the GIZ. For more information see Section A.4.

<sup>35</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>36</sup> Mauritania is divided into 13 Wilayas. See Annex I.

Through Component 1, which corresponds to the results framework objectives CCA-2 and CCA-3, the LDCF project will increase adaptive capacity to address climate change risks using an EbA approach at national and local government levels in Mauritania. A detailed description of the adaptation scenario funded from LDCF resources is presented in Section A.1.4 with indicative activities presented in Annex III.

### **Component 2: Climate resilient livelihoods for rural communities based on EbA measures in rangelands in seven Wilayas in the Sahelian Acacia Savannah Ecoregion.**

Through Component 2, which corresponds to the results framework objectives CCA-1, CCA-2 and CCA-3, the LDCF project will contribute towards increasing the resilience of communities and rangelands to climate change-induced drought, fire and desertification risks through EbA interventions in the Wilayas of Hodh El Chargui, Hodh El Gharbi, Assaba, Guidimaka, Gorgol, Brakna and Traraza. A package of EbA measures will be implemented, including: i) agroforestry with drought-tolerant trees to bind topsoil, increase infiltration of water into topsoils and prevent erosion from wind; ii) soil replenishment with nitrogen-fixing species appropriate for local conditions; iii) sustainable pastoralism and rangeland management techniques to protect grasses from over-grazing; and iv) innovative technologies to control bush fires under climate change conditions. Alternative livelihood options will also be developed, as driven by the needs of the local communities in the target Moughataas<sup>37</sup> and implementation will take gender into account<sup>38</sup>. A detailed description of the adaptation scenario funded from LDCF resources is presented in Section A.1.4 with indicative activities financed by LDCF resources presented in Annex III.

### **Component 3: Awareness and knowledge of EbA and climate resilient livelihoods.**

This component which corresponds to the results framework objective CCA-2, will ensure that the knowledge and awareness for EbA measures is developed and enhanced at national and local government levels. A knowledge dissemination mechanism implemented by the MDEDD will be developed as well as a system for monitoring the socio-economic benefits of EbA measures. A detailed description of the adaptation scenario funded by LDCF resources is presented in Section A.1.4 with indicative activities financed from LDCF resources presented in Annex III.

#### *A.1.4 Incremental cost reasoning and expected contributions from the baseline, the LDCF and co-financing*

The LDCF project will build the climate resilience of local communities and rangelands by improving access to ecosystem services such as fodder, water and food i.e. non-timber forest products. This will be achieved through facilitating the implementation of a package of EbA interventions specifically suited to local conditions at the intervention sites. This package will include interventions to: i) conserve soils; and ii) control bush fires. This will increase the adaptive capacity of local communities by improving rangeland productivity and water holding capacity, which provides a food security buffer against climate change-induced droughts. The LDCF project will also build on results, recommendations and lessons learned from the UNEP-UNDP GEF regional project 'Conservation of Biodiversity through Participatory Rehabilitation of Degraded Land in Arid and Semi-Arid Cross-Border Zones of Mauritania and Senegal' which was implemented from 2003 to 2010. The intervention sites of the proposed LDCF project are located in the seven Wilayas of the Sahelian Acacia Savannah Ecoregion in southern Mauritania which overlap with some sites established by the UNEP-UNDP GEF project. Where possible, LDCF project interventions will build upon the management plans established by communities (with the assistance of external technical support) under the UNDP-UNEP GEF project.

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<sup>37</sup> Mauritania is divided into 44 Moughataas. See Annex I.

<sup>38</sup> UNEP 2006. UNEP's Gender Plan of Action. Available at: [http://www.gender-climate.org/Content/Docs/Publications/IUCN\\_AGenderPlanofActionfortheUNEP.pdf](http://www.gender-climate.org/Content/Docs/Publications/IUCN_AGenderPlanofActionfortheUNEP.pdf).

UNEP has secured baseline co-financing commitments of US\$ 11,900,000 (see Table C). This includes co-financing from the APCBF funded by the Government of Mauritania (GoM), co-financing from the GoM national budget and co-financing from UNEP. The LDCF project will ensure that these investments are resilient under future climate change conditions. The additional cost reasoning for each component is presented below. A summarized description of the climate change vulnerabilities and their impacts to the baseline projects versus the adaptation alternative in Table 1 (see Annex II) is also presented.

### **Component 1: Adaptive capacity of national and local government to address climate change risks through an EbA approach in rangeland areas.**

#### **Business as usual scenario:**

Previous ongoing work of GoM and donor organisations to build the adaptive capacity of national and local (Wilaya) government, the capacity of MDEDD to facilitate the implementation of activities that increase the climate resilience of communities and ecosystems remains low. Such work includes: i) the First and Second National Communications to UNFCCC; ii) a MDEDD Needs Assessment financed by World Bank, GIZ and GoM; iii) ProGRN project financed by GIZ; and iv) National Integrated Support Programme for Decentralisation, Local Development and Youth Employment (PNIDDLE) financed by UNEP. In 2005 the MDEDD changed from a directorate to a ministry. Although climate change and sustainable development were added to the environmental mandate, no additional staff, infrastructure or equipment were assigned to the new ministry. While the local offices and staff are the MDEDD's interface with local communities, there is at present a disconnect between national and local government, and between local government and local communities. Communication from Wilaya (local) to national government occurs via the Department of Internal Relations, the Governor and an environmental delegation, and is facilitated by a coordination unit. This communication chain, as well as interaction with local communities, is hindered by limited training opportunities, equipment requirements and infrastructural needs. At the local community level, AGLCs have been established in 40 Moughataas in three Wilayas. While these AGLCs are an effective platform through which community-based activities can be implemented, technical capacity to facilitate EbA measures is low. Additionally, AGLCs have not been established in the majority of Moughataas in the Wilayas of the Sahelian Acacia Savannah Ecoregion.

Under the business as usual scenario, the capacity of national and local government to facilitate the implementation of activities that increase the climate resilience of communities and rangelands will remain low. This will result in increased vulnerability as a result of the current and expected climate change impacts as outlined in Section A.1.1.

#### **Adaptation scenario:**

LDCF resources will be used to increase the capacity of local and national government – including the Climate Change Unit (CCPNCC) – to facilitate the implementation of EbA measures in areas of Mauritania that are vulnerable to climate change, particularly the Sahelian Acacia Savannah Ecoregion. This will be achieved through the development of a local government delivery system for climate resilient livelihoods based on building the capacity of the local offices. LDCF resources will be used to: i) train national and local MDEDD staff on the use of EbA measures, through a “train-the-trainers” approach to facilitate upscaling at the local level; ii) produce technical guidelines on the use of EbA measures to restore degraded ecosystems and enhance resilience under climate change conditions; iii) propose revisions to existing environmental management and sustainable development policies – based on lessons learned in Component 2 – to identify entry points for promoting the use of EbA measures; and iv) update and/or develop local development plans in target Wilayas that include an EbA approach. The technical skills developed through the above actions will be used to implement the EbA measures through Component 2, and generate awareness through Component 3.

At the local level, existing AGLCs with rangelands in their management areas will be strengthened by developing the capacity of the management committee to implement a range of EbA rangeland interventions, including EbA approaches to fire management and soil restoration. In addition, LDCF

resources will be used to establish AGLCs in Moughataas where the APCBF is being implemented. The geographic locations include the Wilayas of Hodh El Chargui, Hodh El Gharbi, Assaba, Guidimaka, Gorgol, Brakna and Traraza. Existing methods that have proven effective will be used to establish the AGLCs. The LDCF project will: i) delineate management areas; ii) conduct training on EbA approaches based on site-specific, community driven needs in sustainable pastoralism and managing rangelands; iii) establish technical EbA committees; and iv) develop management plans. The strengthening and establishment of AGLCs will be used to implement the EbA measures through Component 2.

Activities under this component will also build on the capacity building actions of the UNEP-UNDP GEF regional project 'Conservation of Biodiversity through Participatory Rehabilitation of Degraded Land in Arid and Semi-Arid Cross-Border Zones of Mauritania and Senegal' which focused on reinforcing the local and national capacities for sustainable management of natural resources and ecosystems through integrating climate resilient livelihoods into community management body financing plans.

These activities will build upon an estimated US\$ 3,430,000 of baseline activities for Component 1. The additional costs sought from LDCF resources are estimated at US\$ 1,425,000.

## **Component 2: Climate resilient livelihoods for rural communities based on EbA measures in rangelands in seven Wilayas in the Sahelian Acacia Savannah Ecoregion.**

### **Business as usual scenario:**

Communities living in the Sahelian Acacia Savannah Ecoregion will continue to be affected by climate hazards such as increased temperatures and drought, leading to desertification and increased frequency and intensity of bush fires<sup>39</sup>. This will exacerbate social and environmental stressors in Wilayas in this area, and therefore affect the socio-economic development. Demonstrations of successfully implemented EbA measures in this region, and throughout Mauritania, are limited. The SCCF-financed project "Enhancing Capacity, Knowledge and Technology Support to Build Climate Resilience of Vulnerable Developing Countries", implemented by UNEP, will facilitate the planting of 450 ha of multi-use greenbelt in Hodh El Gharbi Wilaya and on the outskirts of Nouakchott City. The greenbelts will be used to control desertification using tree species that are useful to local communities. However, there is limited funding to replicate these EbA measures in other parts of Mauritania. Similarly, examples of successfully established alternative livelihood options for local communities that are climate resilient and based on EbA are limited.

The APCBF baseline project is likely to be affected by the expected climate hazards of increased temperatures and drought in the course of its implementation, which will lead to desertification and increased frequency and intensity of bush fires<sup>40, 41</sup>. This would compromise the achievement of the objectives of this project unless adaptation measures are implemented. For example, the APCBF requires assistance to control bush fires under climate change conditions. Currently, fire management is implemented by local communities and government. AGLCs in the target area of the LDCF project already have established bush fire committees as part of their natural resource management. Currently, every year before the dry season starts, MDEDD local staff physically check grasses over the area covered by the APCBF. In collaboration with local communities, a fire management plan is developed and firebreaks are created. Communities are then supplied with emergency equipment to combat any fires that do break out. Community awareness campaigns are run by MDEDD Inspectors and Forest Guards through AGLCs, media and NGOs (Association of Friends of the Environment).

<sup>39</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>40</sup> Ethmane Ould Boubacar. 2011. Rapport National: Forêts, Pâturages et Changement Climatique en Mauritanie. Direction Protection de la Nature. Ministère Délégué Auprès du Premier Ministre Chargé De L'Environnement et du Développement Durable.

<sup>41</sup> IPCC. 2012. Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.

AGLCs coordinate the response to an outbreak of fire, without the oversight of experts in fire management. If the fire cannot be managed, all civil agencies are obliged to assist with limiting the damage. Once the fire is extinguished, the MDEDD writes a report detailing the potential cause of the fire – most often as a result of shepherds burning areas to increase grazing opportunities – as well as the area burnt and the extent of crop damage. This largely reactive, uncoordinated approach, which is not based on modern fire management techniques, is likely to become increasingly ineffective under climate change conditions, which are expected to increase the frequency and intensity of bush fires in Mauritania.

**Alternative scenario:**

LDCF resources will be used to implement a package of best practice, cost effective and concrete EbA interventions in the Wilayas of Hodh El Chargui, Hodh El Gharbi, Assaba, Guidimaka, Gorgol, Brakna and Traraza within the Sahelian Acacia Savannah Ecoregion. These measures will include EbA approaches to: i) control bush fires; and ii) restore degraded soils.

Improved fire management using EbA techniques will include measures to: i) establish green fire breaks; and ii) undertake strategic, controlled burning i.e. igniting fires from aircraft, vehicles or on foot. Green fire breaks will be planted with species such as *Vetiver senegal*, which is non-invasive and fire resistant. *Tamarix aphylla* will also be used in the green fire breaks. This tree produces a salt drip that suppresses vegetation beneath the crown, and makes the litter too salinized to burn. The result is a tree that is highly effective at controlling fires. Drought resistant, multi-use tree species that provide non-timber forest products – and therefore the opportunity to develop alternative livelihoods – will be inter-cropped with these fire resistant species to establish productive zones that have the dual function of controlling fires and providing an income source. Strategic implementation of controlled burning – including a reduction in the total area burnt annually, linking of burnt patches and corridors and a shift to a predominantly early dry season regime – to manage ecosystems will enable the development of tailored fire regimes that protect, maintain and enhance high value and vulnerable habitats and flora and fauna. Variation in the timing, intensity and frequency of fire will increase the spatial and temporal heterogeneity of the ecosystem within the LDCF project target area, thereby enhancing the resilience of ecosystems and dependent communities.

Measures to restore degraded soils will include but not be limited to: i) improved rangeland management to protect grasses from overgrazing; ii) soil replenishment with nitrogen-fixing species appropriate for local conditions; and iii) agroforestry with trees to bind topsoil, increase infiltration of surface water and prevent erosion primarily from wind. Tree species will be selected that: i) are resilient to drought; and ii) provide a source of food and other non-timber forest products. Potential candidate species include the gum arabic tree (*Acacia senegal*), red acacia (*Acacia seyal*), desert date (*Balanites aegyptiaca*), date palm (*Phoenix dactylifera*), jujube tree (*Ziziphus mauritiana*), baobab (*Adansonia digitata*), tamarind tree (*Tamarindus indica*) and marula (*Sclerocarya birrea*). There is increasing agreement in the international literature<sup>42</sup> that domestication of indigenous, edible plants for the diversification of subsistence agriculture can play a significant role in the achievement of the Millennium Development Goal 1: eradicating extreme poverty and hunger. Simultaneously, these species can be used to halt and reverse the increasing degradation of ecosystems while also providing economic opportunities, particularly in African countries<sup>43</sup>. The selected fire control and soil restoration EbA measures will be demonstrated in pilot field schools in at least five AGLCs in each of the seven target Wilayas. These pilot field schools will be used to demonstrate the benefits of the EbA measures to local communities, who will be involved in the collection of data from the sites and interpretation of direct and indirect results and benefits. This will facilitate the uptake of EbA measures at the local level.

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<sup>42</sup> Leakey RRB, Tchoundjeu Z, Schreckenber K, Simons AJ, Shackleton S, Mander M, Wynberg R, Shackleton C, Sullivan C. 2007. Trees and markets for agroforestry tree products: targeting poverty reduction and enhanced livelihoods. In: *World agroforestry into the future*. Garrity D, Okono AM, Parrott S (eds) World Agroforestry Centre, Nairobi, pp 11–22.

<sup>43</sup> Garrity DP, Akinnifesi FK, Ajayi OC, Weldesemayat SG, Mowo JG, Kalinganire A, Larwanou M, Bayala J. 2010. Evergreen Agriculture: a robust approach to sustainable food security in Africa. *Food Security* 2:197–214.

The EbA measures implemented through this component will be complemented by the development of alternative livelihood strategies for local communities. The strategies will be developed taking into consideration the size of the target communities and availability of natural resources within the AGLC boundary. This development will be done in conjunction with the World Food Programme (WFP) project “Enhancing Resilience of Communities to the Adverse Effects of Climate Change on Food Security in Mauritania”. The LDCF project will develop a portfolio of alternative livelihood strategies for communities to choose from, based on their needs, on principles of sustainable pastoralism, and the outcomes of the WFP project.

These activities will build upon an estimated US\$ 6,280,000 of baseline activities for Component 2. The additional costs sought from LDCF resources are estimated at US\$ 2,600,000.

### **Component 3: Awareness and knowledge of EbA and climate resilient livelihoods.**

#### **Baseline scenario:**

At present, national and local government, as well as local communities, have limited knowledge of the benefits of an EbA approach to address climate change impacts. A national web-based platform exists through which local offices share national planning information with national government, but this platform cannot be accessed by non-government stakeholders and currently is not used to share information on EbA and the associated benefits. In addition, there are no communication or outreach strategies providing such information to stakeholders. The lack of information and awareness is one of the key barriers and challenges that affect the implementation and integration of EbA into development planning process. As a result, appropriate EbA measures are not integrated into new and existing national policies and strategies, and the benefits are not appreciated by government and local stakeholders.

Under the business as usual scenario, knowledge and awareness of EbA and the associated benefits in building climate resilience of communities and ecosystems will remain low. This will limit the uptake of an EbA approach at national, local and local levels.

#### **Alternative scenario:**

LDCF resources will be used to develop a communication outreach strategy to raise awareness on the benefits and opportunities offered by EbA – alone or in combination with other adaptation measures. The mechanism will include: i) an education campaign for school and university students; and ii) a media campaign aimed at national, local and village levels using existing communication channels such as local radio stations. Summary guidelines will be developed highlighting climate change threats specific to Wilayas, and the appropriate EbA measures to build climate resilience of communities and ecosystems. To facilitate the sharing of information between national government, local offices, producer networks, and local communities (where internet access is available), the existing web-based platform situated at MDEDD within national and local offices will be strengthened. The increased availability of information related to EbA, climate change adaptation and assessments of vulnerability will support replication and upscaling of EbA activities. Furthermore, the increased availability of local data, e.g. generated by household surveys, can be used to inform initiatives in related sectors such as disaster risk management, food security, water and health.

Supply chains of non-timber forest products produced in Component 2 will be strengthened where feasible. LDCF resources will also be used for setting up a system for monitoring and assessing the effectiveness of the range of EbA measures implemented through Component 2. Lessons learned will feed back to national and local government (all ministries/departments) to improve the implementation and sustainability of future EbA measures, and to facilitate upscaling of an EbA approach. An upscaling strategy will be developed that includes linkages to local and global climate finance initiatives as well as government budgets.

These activities will build upon an estimated US\$ 1,714,000 of baseline activities for Component 3. The additional costs sought from LDCF resources are estimated at US\$ 750,000.

Table 1 in Annex II provides a summary of the baseline projects, climate hazards, their impacts to the baseline projects, targeted ecosystem services as well as adaptation measures proposed by the LDCF project.

#### *A.1.5 Adaptation benefits*

Predicted climate change in the rangelands of the Sahelian Acacia Savannah Ecoregion in Mauritania will reduce the livestock carrying capacity for the country unless adaptation measures including innovative EbA approaches are undertaken. The project addresses the vulnerability of local communities in the Sahelian Acacia Savannah in Mauritania to climate change. This region is particularly vulnerable to desertification. Decade long droughts in the Sahel region are the result of strong feedbacks between climate, land degradation and vegetation cover<sup>44</sup>. Preventing land degradation and maintaining vegetation cover is therefore fundamental for reducing the effects of climate change and negative impacts on local community livelihoods. Sustainable management of rangeland systems is also cost-effective. Per annum, rangeland systems provide ecosystem services with an estimated value of over US\$ 230 per hectare for air regulation, water regulation, erosion control, waste treatment, pollination, biological control, food production and recreation<sup>45</sup>. Although, the quantity of ecosystem services in the Sahel is likely to be lower than global averages, local communities are directly reliant on Sahelian rangelands for their livelihoods. These communities are very vulnerable to intense droughts and the environment is at substantial risk of degradation. The considerable value of this rangeland system to local communities and the extensive benefits that can be provided by this project ensure that the cost of investment will be far outweighed by the development and adaptation benefits gained.

The project area will be affected by an increased frequency and intensity of drought conditions and increased occurrence of flash floods which will place increased strain on already degraded rangelands and local communities living in these rangelands. Climate change impacts will include reduced water availability, an increase in the frequency and intensity of fires, reduced forage and therefore a decrease in livestock productivity. This project will increase the resilience of local communities to climate change by implementing EbA measures that will: i) increase the availability of water; ii) reduce the frequency and intensity of fires; and iii) increase the availability of grazing for livestock.

In addition to capacity building benefits, the LDCF project will result in tangible adaptation benefits. Local communities in rangelands are directly reliant on these rangelands for their livelihoods and sustenance. The maintenance of these systems is not only vital for the survival of local communities but for regulating climatic conditions and buffering communities from extreme climatic events<sup>46</sup>. The specific adaptation benefits of the LDCF project include: i) reduction of ecosystem vulnerability; ii) decreased erosion; iii) maintenance of ecosystem services including forage for livestock; iv) protection of habitats for biodiversity; and iv) the provision of alternative livelihood options empowering women e.g. non-timber forest products. With EbA at the core of the project, the project will not only generate adaptation benefits, but will provide mitigation through carbon sequestration, the sustainable use of natural resources and reduced greenhouse gas emissions from fires.

#### *A.1.6 Innovativeness, sustainability and potential for scaling up*

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<sup>44</sup> Foley, J.A., Coe, M.T., Scheffer, M. & Wang, G. 2003. Regime shifts in the Sahara and Sahel: interactions between ecological and climatic systems in Northern Africa. *Ecosystems*, 6, 524-539.

<sup>45</sup> Costanza, R. d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R., Paruelo, J., Raskin, R.G., Sutton, P. & van den Belt, M. 1997. The value of the world's ecosystem services and natural capital. *Nature*, 387, 253- 260.

<sup>46</sup> Foley, J.A., Coe, M.T., Scheffer, M. & Wang, G. 2003. Regime shifts in the Sahara and Sahel: interactions between ecological and climatic systems in Northern Africa. *Ecosystems*, 6, 524-539.

Using EbA to build climate-resilience of local communities (including pastoral communities) in Sahelian rangelands is both innovative and cost-effective. EbA provides favourable cost-benefit ratios compared with hard infrastructure approaches<sup>47</sup>. It not only reduces climate change vulnerability, but simultaneously provides a range of co-benefits including carbon sequestration, biodiversity conservation, alternative livelihoods and poverty reduction opportunities. Furthermore, EbA improves ecosystem resilience, conserves biodiversity, and reduces the risk of ecosystems shifting to unrecoverable states as climates change. Such shifts are an imminent threat in Mauritania, where the desert is expanding south. The use of EbA is relatively new in Mauritania and the project will therefore be introducing novel approaches into natural resource management within the country. Furthermore, the project will integrate EbA approaches into the baseline projects to assist them in adapting to the effects of climate change, increasing ecosystem services and ultimately providing benefits to local communities. Moreover, the project will make use of innovative methods and technologies for applying EbA approaches to sustainable pastoralism and fire management techniques. The project will also collaborate with relevant stakeholders to avoid redundancy and promote complementarity and cost-effectiveness.

The sustainability of the proposed LDCF project will be enhanced by: i) developing and institutionalizing an upscaling strategy for EbA; ii) developing rangeland EbA measures that are tailored to local conditions; iii) mainstreaming rangeland EbA into policies and strategies; iv) building the technical and institutional capacity of national and local government to assist local communities in the planning and implementation of rangeland EbA; v) building the capacity of local communities to implement EbA; vi) involving local communities in decision making and implementation to ensure buy-in; vii) demonstrating the benefits of low-cost rangeland EbA interventions to communities; viii) providing a knowledge base and guidelines for designing and implementing EbA; and ix) building public awareness of EbA and the benefits of EbA. In addition, initiating a long term monitoring plan in collaboration with local research institutes and universities under Component 3 would also help generating data and lessons learned that would be useful on both a national and international scale. Ideally this would help provide solid evidence of the EbA interventions utilised and initiated in the course of this LDCF project and thus ensure that its activities would be sustained and upscaled.

Furthermore, the project will build on the UNEP-UNDP GEF regional project ‘Conservation of Biodiversity through Participatory Rehabilitation of Degraded Land in Arid and Semi-Arid Cross-Border Zones of Mauritania and Senegal’, which was completed in 2010. Results of the project include regulatory and policy changes at regional, national and/or local levels. The implementation strategy has contributed to speeding up the process of adopting decrees enforcing the Mauritanian Forest Code, which confers more natural resource management responsibilities on local communities. The project has also produced some range management initiatives which were in their early stages upon completion of the project in 2010. The proposed LDCF project will build upon this GEF project so as to use the lessons learned and structures (such as community structures) developed or enforced in the previous project in order to maximize the potential to both sustain results and lessons learned from the previous project and build on these through the proposed project. A thorough stock-take of results and from the UNEP-UNDP GEF regional project will be completed during the PPG phase.

## **A.2. Stakeholder Engagement.**

The proposed LDCF project was designed in collaboration with GoM stakeholders during a PIF preparation mission to Mauritania from 12-16 May 2013. Consultations with a wide range of government and non-government stakeholders were held, including at the local level. Key stakeholders of the LDCF project were identified as local communities, local and district administrations, and national government agencies. The Executing Agency is MDEDD, and the Implementing Agency is UNEP.

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<sup>47</sup> Jones, H.P., Hole, D.G. & Zavaleta, E.S. 2012. Harnessing nature to help people adapt to climate change. *Nature Climate Change* 2, 504-509.

The LDCF project will be developed further in the PPG Phase using a consultative and participatory approach. Stakeholder participation and validation of key processes will be carried out for all activities. The consultations around proposed activities will mobilise local communities, initiate discussions and promote local buy-in. This project will create active partnerships with NGOs and civil society organisations at the local and national level, and with relevant ongoing initiatives and projects which will be updated during the PPG phase. It will also draw upon relevant work at the global level, especially through the IUCN-coordinated World Initiative for Sustainable Pastoralism, that has initiated studies and innovation on climate adaptation in the context of rangelands.

The LDCF project will build climate resilience in local communities in rangelands of Mauritania which are highly vulnerable to the effects of climate change. Livestock herders will be the main beneficiaries of this project. Importantly, the representation and active participation of women and other vulnerable demographics will be emphasised during the implementation of all project activities. Relevant governmental stakeholders (e.g. Department of Agriculture, Directorate of Livestock, Directorate of Women) will be consulted in order to ensure that project activities are consistent with specific government priorities within the project areas.

At the commencement of the PPG implementation phase, an inception workshop will be convened for all major stakeholders. During this workshop, a Project Steering Committee will be formed. A range of EbA interventions will be identified during the PPG, as well as the selection criteria for deciding on the most appropriate interventions. Criteria to identify appropriate project sites will also be reviewed, according to Free and Prior Informed Consent principles. During mapping workshops, experts in fields related to the project interventions (e.g. rural development experts, agricultural specialists, pastoral and rangeland scientists, environmental management officials, local community organisations, disaster risk management technical staff etc.) will assess the potential adaptation measures and project sites, leading to the selection of appropriate interventions. The inception and mapping workshops will also enable the: i) collection of baseline information; ii) documentation of ongoing initiatives and potential areas of collaboration; iii) initiation of discussions with potential implementing and co-financing partners; and iv) design of strategies for upscaling of project interventions. The PPG phase will also conduct an environmental and social impact assessment as soon as the main direction of the future project has been designed and endorsed by all stakeholders.

A preliminary list of potential stakeholders that will be invited to participate in the consultation process includes IFAD, UNDP, CIDA, World Bank, Department of Agriculture, Directorate of Livestock, Ministry of Finance, Directorate of Women, representatives from AGLCs, government staff (from local, district and national administrations), representatives of the National Platform for Risk and Disaster Management<sup>48</sup>(PNGRC), and local NGOs and civil society organisations. In addition to these, stakeholders involved in the UNEP-UNDP GEF regional project ‘Conservation of Biodiversity through Participatory Rehabilitation of Degraded Land in Arid and Semi-Arid Cross-Border Zones of Mauritania and Senegal’ will be consulted in the PPG phase with the aim of involving them as thoroughly as possible in this project so as to integrate lessons learned from the previous project and keep the momentum for initiatives started that will project would be able to build on. A full list will be compiled upon the launch of the PPG.

### A.3. Risks

The risks facing the successful implementation of the project are outlined in Table 2 below, along with appropriate mitigation measures.

Table 1. Risks, ratings and mitigation measures.

Identified risks	Risk rating	Mitigation measures
Local stakeholders do not support	Medium	•Local stakeholders will be engaged throughout

<sup>48</sup> La Plateforme Nationale de Gestion des Risques de Catastrophes

the proposed EbA measures.		<p>implementation of adaptive management approaches and will participate in project planning, implementation and monitoring.</p> <ul style="list-style-type: none"> <li>•The project will focus on raising awareness on the benefits of EbA.</li> <li>•The project will be institutionalised and implementation of measures will consider site-specific socio-economic and ecological conditions.</li> </ul>
Staff turnover in Project Steering Committee, project management team and responsible government departments.	Medium	<ul style="list-style-type: none"> <li>•Supporting relationships including deputies and alternative representation will be established during project inception.</li> <li>•Established government structures will be used where possible.</li> </ul>
Limited funds available to sustain project benefits.	High	<ul style="list-style-type: none"> <li>•An upscaling strategy will be developed and institutionalised. This strategy will include planning for future funding of EbA.</li> <li>•EbA measures will be mainstreamed into policies and awareness raising will be conducted for decision makers.</li> </ul>
Limited technical capacity to implement the project	Medium	<ul style="list-style-type: none"> <li>•Capacity will be developed as required.</li> <li>•International and local experts will work closely with project managers and relevant stakeholders.</li> <li>•Capacity of national and local government will be substantially strengthened to enable the planning and implementation of EbA measures.</li> </ul>
Conflict between stakeholders regarding roles in the project	Low to medium	<ul style="list-style-type: none"> <li>•A stakeholder engagement plan will be developed during the PPG phase.</li> <li>•Community stakeholders will be engaged with during the PPG phase to ensure their buy-in into the project and will be actively engaged throughout project implementation.</li> </ul>
Interventions are not cost effective	Low to medium	<ul style="list-style-type: none"> <li>•EbA is an inherently cost-effective approach, and ensuring cost-effectiveness will be a core principle of the project.</li> <li>• Detailed information on cost-effectiveness will be collected and analysed during the PPG Phase to inform the design of project interventions.</li> </ul>

#### A.4. Coordination with other relevant GEF financed and other initiatives

The LDCF project will build on and coordinate with several past and ongoing initiatives that include a climate change adaptation focus as well as rangeland management focus. Collaboration will be achieved through a project coordinators committee, which will be established by this LDCF project. The project coordinators committee will meet once every three months to discuss the progress of related initiatives and coordinate activities. Further details of its operation will be determined during the PPG phase. The committee will comprise public, private and local community stakeholders involved in the design and implementation of the following initiatives:

- German Society for International Cooperation (GIZ) **Programme Gestion de Ressources Naturelles (ProGRN)** or Natural Resource Management Programme in Mauritania is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) (2011 – 2016, US\$ 9.6 million). The aim of ProGRN is to create a framework for sustainable management of natural resources by local populations in selected areas. Interventions include: i) capacity building of all stakeholders and their organizations; ii) training of local communities; iii) consideration of gender aspects; and iv) consultation with development partners to achieve greater aid effectiveness. An important achievement of the ProGRN has been the establishment of “Local Collective Management Associations” (AGLCs) which are community organizations responsible for the sustainable management of natural resources within their designated local area.
- World Food Programme Adaptation Fund’s **“Enhancing resilience of communities to the adverse effects of climate change on food security in Mauritania”** project (2013 – 2017, US\$

7.8 million) which is implemented by MDEDD. The project will promote enhanced environmental governance through ecological monitoring, the management and sharing of climate change knowledge, and the mobilisation and involvement of communities to adapt to climate change and build resilient, food-secure livelihoods. This will be achieved through: i) strengthening government services to support communities in their participative development and implementation of local adaptation and natural resource management plans; and ii) mobilising communities to invest in resilience and climate change adaptation.

- IFAD/GEF/Government of Mauritania’s **“Support to the adaptation of agricultural production systems that are vulnerable to climate change”** project (2011 – 2015, US\$ 14 million) which aims to provide strategic climate change adaptation support to agricultural production systems in Mauritania by increasing the resilience of plant and animal production systems that are vulnerable to climate change impacts.
- China SCCF project **“Enhancing capacity, knowledge and technology support to build climate change resilience of vulnerable developing countries”** (2013 – 2017; US\$ 39.6 million) funded by GEF, UNEP, National Development and Reform Commission of China, and the Governments of Nepal, Seychelles and Mauritania. The project aims to build climate resilience in vulnerable African and Asia-Pacific countries by providing support for planning, financing and implementing EbA through effective capacity building, knowledge support and concrete, on-the-ground interventions in coastal, mountain and arid/semi-arid ecosystems.
- IFAD/MRD/DSF/GEF’s **“Poverty reduction project in Aftout South and Karakoro phase 2 (PASK-II)”** (2012 – 2020, US\$ 28.9 million) aims to improve incomes and living conditions for target populations. The project will help build an economic and social fabric based on sustainable natural resource management that is inclusive of poor rural households. The project focuses on: i) soil restoration; ii) surface water management; iii) crop and livestock management; and iv) local development support.
- EU’s **“Global alliance on climate change Mauritania: Setting in motion food security and climate change resilience”** (2012 – 2015, total budget of EUR 8 million) project aims to increase climate resilience of Africa’s population, addressing the need for improved climate information in Africa and strengthening the use of such information for decision making.
- CIDA and WB’s **“Support the institutional capacity building and research activities of the West and Central African Council for Agricultural Research and Development (WECARD)”** (US\$ 10 million) project which aims to contribute to the development and dissemination of innovative agricultural technologies and knowledge to local farmers and producers who are directly implicated in the region's agricultural production and food security.
- GEF/IFAD/Ministry of Rural Development (MRD); Ministry of Environment and Sustainable Development (MESD)’s **“Participatory environmental protection and poverty reduction in the oases of Mauritania”** project (2007 – 2014, US\$ 20 million) which includes multiple pilot projects that focus on using a participatory approach at national and local level to reduce poverty, control land degradation and desertification, and conserve the oasis ecosystems and surrounding lands.
- IFAD/GEF’s **“Support to the adaptation of vulnerable agricultural production systems”** project (2012 – 2015, US\$ 8.1 million) aims to increase the resilience of rural communities in response to the harmful effects of climate change on water resources and agricultural production systems.
- GEF/African Heads of State’s **“Muraille Sahel (Programme Sahel)”** (US\$ 119 million) which aims to plant a 15 km transcontinental forest belt from Dakar to Djibouti to combat desertification.
- GEF UNEP-UNDP regional project **‘Conservation of Biodiversity through Participatory Rehabilitation of Degraded Land in Arid and Semi-Arid Cross-Border Zones of Mauritania and Senegal’** which was completed in 2010. The project worked to develop models for rangeland management and restoration which will be reviewed along with its other results and recommendations in the PPG phase so as to ensure that the proposed project takes a holistic ecosystemic view where the proposed EbA techniques offered in this project (i.e. fire breaks and soil restoration through afforestation) are concerned.

## **B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

### **B.1. National strategies and plans or reports and assessments under relevant conventions**

The project is consistent with the following strategies/projects/programmes:

Mauritania's National Sustainable Development Strategy (NSDS, 2006) and the National Environment Action Plan (NEAP, 2007-2016) guide the integration of environment and sustainable development concepts into sectoral policies. The NSDS focusses on the synergistic relationship between effective environmental policy and economic growth, good governance and poverty reduction. The LDCF project aligns with the NSDS by contributing to the achievement of the following strategic goals: i) promoting sustainable development and environmental protection in line with international commitments, agreements and conventions; ii) strengthening the institutional capacity of government staff at the national and local level to effectively manage the environment and the natural resources; iii) promoting the development of service delivery as a strategy to reduce poverty; iv) promoting integrated and participatory management for sustainable use of natural resources; and v) raising awareness of the risks associated with climate change, and the benefits of EbA as a means to increase climate resilience. In this way the LDCF project will support climate change and natural resource priorities under the NSDS and NEAP.

In response to the increased frequency of natural disasters, Mauritania developed a National Action Plan for Disaster Risk Management (PAN-GRC) in 2007 in collaboration with UNDP. PAN-GRC focuses on responding to and preventing risks and disasters within three thematic areas, specifically: i) food security ; ii) environment (drought, desertification, bushfire, pollution etc.); and iii) health. PAN-GRC prioritises bush fires as one of nine major disasters threatening local community livelihoods. The LDCF project will support the PAN-GRC by: i) increasing local capacity to monitor, map and reduce fire and other environmental hazards ; and ii) generating socio-economic data from household surveys and vulnerability assessments that will inform all three of the PAN-GRC's focal areas. Representatives of the Cross-Sectoral Committee<sup>49</sup> (CIGRC) within the National Platform for Risk and Disaster Management<sup>50</sup> (PNGRC) will be included in consultations during the PPG and implementation phases.

In addition to the NSDS and NEAP, the LDCF project is consistent with the following national policies/plans/strategies: i) Master Plan for Combatting Desertification (1987); ii) National Biodiversity Strategy (1998); iii) Rural Sector Development Strategy (1998 and 2001); iv) Forestry Code (1997); v) Strategic Investment Framework for Sustainable Land Management (2009); vi) Environmental Code; vii) National Gender Strategy (2006); viii) National Action Plan to Combat Desertification; ix) National Social Protection Strategy (2011)<sup>51</sup>; and x) Poverty Reduction Strategy Paper 2011-2015 (PRSP)<sup>52</sup>.

Mauritania's UNDAF (2012-2016) was developed based on the Poverty Reduction Strategy Paper (*viz.* Strategic Framework to Combat Poverty, 2000) and the Millennium Development Goals. In the UNDAF, the Government of Mauritania identified the challenges of wide-spread poverty, over-population, overutilization of natural resources, and limited governance as development priorities. The LDCF project is aligned in particular with the third and fourth axes of cooperation, namely: "improvement of environmental governance and rational use of natural resources" (axis 3) and "good governance and capacity building" (axis 4).

The LDCF project addresses five of the 28 NAPA (2004) priorities:

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<sup>49</sup> Comité Interministériel de Gestion des Risques de Catastrophes

<sup>50</sup> La Plateforme Nationale de Gestion des Risques de Catastrophes

<sup>51</sup> Strategie Nationale de Protection Sociale

<sup>52</sup> Cadre Strategique de Lutte contre la Pauvrete

- Priority 7: *Reorganization of the communities adversely affected by climate change*. This will be achieved through the strengthening and/or establishment of AGLCs in the project target areas in Component 1.
- Priority 11: *Participatory reforestation for energy and agroforestry in agricultural zones*. This will be achieved through the reforestation EbA interventions in Component 2.
- Priority 20: *Development of fodder crops*. This will be achieved through the planting of useful tree and fodder species in Component 2.
- Priority 25: *Improved knowledge on forest resources and their sustainable management*. This will be achieved through the training of AGLC and local communities in Component 2.
- Priority 28: *Institutional reinforcement of the body responsible for nature conservation*. This will be achieved through the institutional and technical capacity strengthening of MDEDD in Component 1.

## **B.2. GEF Focal area and/or fund(s) strategies, eligibility criteria and priorities:**

The project meets the eligibility criteria and programming priorities of the LDCF. It fits with the strategic objective of the LDCF to “meet the urgent and immediate adaptation needs of the Least Developed Countries, as identified in their NAPAs” (Decision 7/CP.7), by focusing on: i) integrating climate change into land-use planning and development strategies; ii) demonstrating the implementation of adaptation measures; and iii) building institutional capacity to deal with climate change risks.

The project aims to implement climate change adaptation measures that will protect and enhance the resilience of natural ecosystems and vulnerable human populations in Mauritania. It will also build capacity within Mauritania to improve governance and facilitate the upscaling of appropriate measures to increase the resilience of local communities. Consequently, the LDCF project will contribute to the following climate change adaptation objectives and outcomes:

- **Objective CCA-1 Reducing Vulnerability**, specifically **Outcome 1.3: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas**;
- **Objective CCA-2 Increasing Adaptive Capacity**, specifically **Outcome 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level**; and
- **Objective CCA-3 Adaptation Technology Transfer**, specifically **Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas**.

## **B.3. The GEF Agency’s comparative advantage for implementing this project:**

The LDCF project is consistent with UNEP’s comparative advantage in structuring investments in climate change adaptation around best practices. UNEP has a proven international track record in providing strong technical and scientific assistance for enhancing adaptive capacity within LDCs. This is in line with UNEP’s core business of providing technical advice on ecosystem management. The project builds on UNEP’s expertise in ecosystem management and adaptation technology as demonstrated in UNEP’s flagship Ecosystem-based Adaptation Programme, which has been commended by the Conference of the Parties to the UNFCCC for its ground-breaking approach to climate change adaptation.

UNEP also has a presence in the country implementing the project “Enhancing Capacity, Knowledge and Technology Support to Build Climate Resilience of Vulnerable Developing Countries”. Furthermore, the LDCF project is built on UNEP’s experience of implementing 90+ GEF and non-GEF adaptation projects (including *inter alia* LDCF, SCCF, and Adaptation Fund projects) at global, local and national levels. Through the implementation of these projects, UNEP has supported the development of innovative solutions for national governments and local communities to adapt to climate change in a manner that is socially, economically and environmentally sound and sustainable. This work focuses on three themes: i) Science and Assessments; ii) Knowledge and Policy Support; and iii) Building the Resilience of Ecosystems for Adaptation. In addition to this, a previous UNEP-

UNDP GEF regional project ‘Conservation of Biodiversity through Participatory Rehabilitation of Degraded Land in Arid and Semi-Arid Cross-Border Zones of Mauritania and Senegal’ has demonstrated UNEP’s ability to successfully implement a project in Mauritania and form relationships that can be revisited for the successful implementation of this project.

UNEP is well-positioned to execute environmental work through the evidence-based implementation of applied scientific research to inform policies and guide project activities. The focus of the LDCF project to increase rangeland productivity and support community livelihoods is dependent on managing agro-ecological systems in a sustainable manner. This technical advisory is UNEP’s core business giving it a significant comparative advantage. In particular, UNEP will ensure that scientifically rigorous data and information is generated from the project through a long-term monitoring programme that will provide valuable lessons learned for information sharing and dissemination. UNEP’s experience in revising policy will ensure that this information is translated into appropriate policy, strategy and planning documents.

UNEP’s Division of Environmental Policy and Implementation is also in the process of developing its strategy on sustainable pastoralism, and creating networks and encouraging innovation in this area, in collaboration with the IUCN coordinated World Initiative on Sustainable Pastoralism (WISP). The LDCF project will draw upon this and lessons from several other developing or ongoing UNEP projects and activities on sustainable pastoralism.

GEF Council paper C.31/15 outlines the comparative advantages of UNEP through: i) providing GEF with the best available science and knowledge upon which to base investments; ii) expertise on environmental and climate change matters; and iii) considerable experience in the piloting of successful innovative approaches and implementation of adaptive learning. The project builds upon this comparative advantage. In addition, GEF Council paper C.28/18 also details UNEP’s comparative advantage areas as including “developing and using climate information to effect changes in relevant sectoral policies based on climate science”, an area which is addressed by the LDCF project.

**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 template. For SGP, use this [OFP endorsement letter](#)).

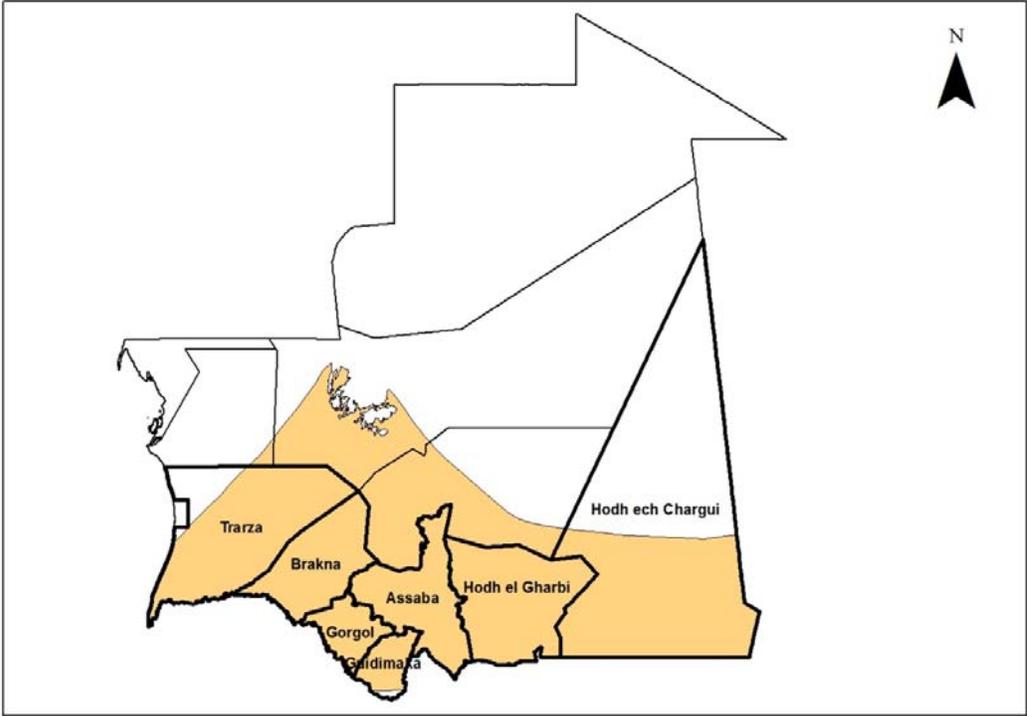
NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mohamed Yahya Ladfal	GEF Political and Operational Focal Point	Ministry of Environment and Sustainable Development (MDEDD)	24 JUNE 2013

**B. GEF AGENCY(IES) CERTIFICATION**

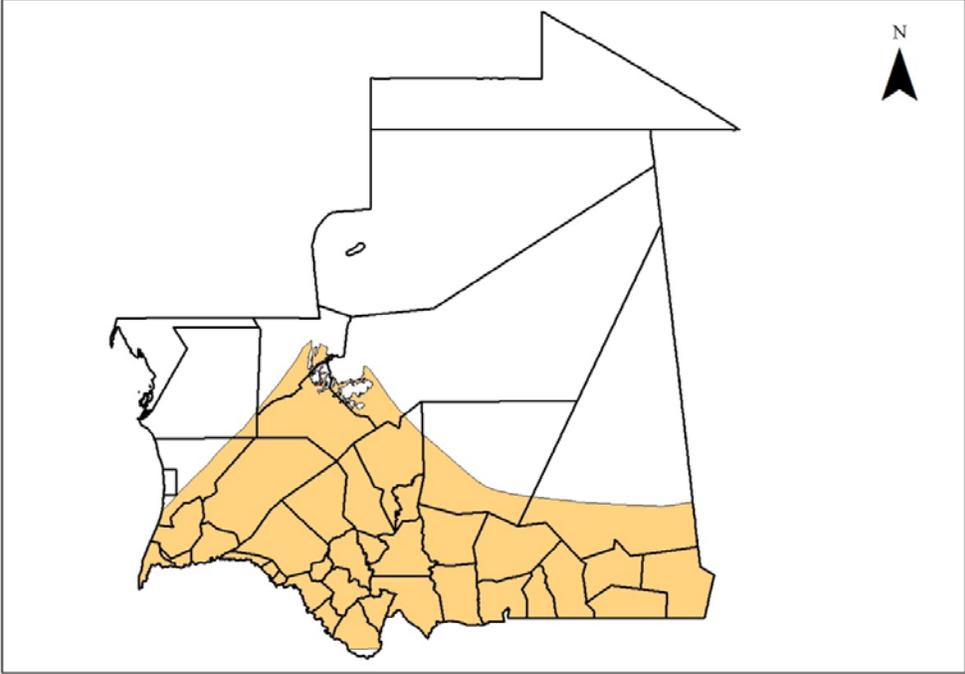
This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Maryam Niamir-Fuller, Director, GEF Coordination Office, UNEP.		11/13/2013	Ermira Fida Head, GEF Adaptation Unit, DEPI, UNEP	+254 714636329	<a href="mailto:ermira.fida@unep.org">ermira.fida@unep.org</a>

**Annex I**

a. The 13 Wilayas of Mauritania and location of the Sahelian Acacia Savannah Ecoregion.



b. The 44 Moughataas of Mauritania and location of the Sahelian Acacia Savannah Ecoregion



## Annex II.

**Table 1: Climate change vulnerabilities of the baselines projects versus the adaptation measures under the LDCF project.**

Baseline projects  •Goals and activities	Climate change hazards affecting the project area	Impacts to the baseline projects and targeted populations as a result of climate change	Ecosystem services targeted by the LDCF project	Adaptation measures supported by the LDCF project	Expected LDCF project benefits
<b>Project targeted vulnerable sites and communities:</b> Local communities in Hodh El Chargui, Hodh El Gharbi, Assaba, Guidimaka, Gorgol, Brakna and Traraza <sup>53</sup> Wilayas that are vulnerable to drought and flash floods.					
<p><b>Annual Programme to Combat Bush Fires (APCBF), MDEDD</b> increases the access of livestock to rangeland, secures strategic pastoral reserves across the country and protects and conserves biodiversity.</p> <p>Activities include:</p> <ul style="list-style-type: none"> <li>•Creation of firebreaks.</li> <li>•Fire fighting.</li> <li>•Coordination of fire fighting efforts and monitoring of fires in rangelands.</li> <li>•Building awareness on protection of rangelands from fire.</li> <li>•Establishment of an information system and an early warning system to mitigate damage from bush fires.</li> </ul>	<p>More frequent and severe droughts because of decreased precipitation and increased temperatures.</p> <p>More frequent flash floods.</p>	<p>Increased water and heat stress on rangelands.</p> <p>Increased fire frequency and greater intensity of fires in rangelands.</p> <p>Reduced access of livestock<sup>54</sup> to grazing in rangelands.</p> <p>Declines in water available for livestock.</p> <p>Heat stress on livestock.</p> <p>Reduced security of rangelands.</p> <p>Increased threat of biodiversity loss in rangelands.</p> <p>Local community livelihoods compromised by water scarcity and flooding.</p>	<p>Provision of water.</p> <p>Provision of fodder.</p> <p>Provision of shade.</p> <p>Regulation of fire frequency and intensity.</p> <p>Maintenance of biodiversity.</p>	<p>Strengthening capacities of local and national government to assist local communities in planning and implementing EbA.</p> <p>Increasing awareness of the benefits of EbA.</p> <p>Implementing concrete on-the-ground EbA measures including green firebreaks and managing fire under climate change conditions.</p>	<p>Local stakeholders are aware of the effects of climate change and its impact on rangelands and bushfires.</p> <p>Climate risks and EbA measures are integrated into fire and rangeland management policies and strategies.</p> <p>National and local government capacity is increased to support rangeland management and implementation of EbA measures by local communities.</p>

<sup>53</sup> In the Sahelian Acacia Savannah Ecoregion.

<sup>54</sup> Cattle, goats, camels and sheep.

### **Annex III - Indicative activities for each project component**

#### **Component 1: Adaptive capacity of national and local government to address climate change risks through an EbA approach in rangeland areas.**

- Develop policy briefs and technical guidelines for policy- and decision-makers on increasing the climate resilience and sustainable pastoralism of local communities living in rangelands of the Sahelian Acacia Savannah Ecoregion through EbA measures based on updated and consolidated assessments of the vulnerability of the target areas.
- Revise existing ecosystem management and sustainable development policies and strategies, to identify entry points for promoting adaptation via restoration of degraded ecosystems and management of livestock mobility.
- Develop institutional capacities of MDEDD and other line Ministries to integrate climate change adaptation focused on EbA measures into national as well as local area development plans.
- Hold workshops for national and local government authorities to build technical capacity on the implementation of EbA measures.
- Develop training manuals to guide national and local government on implementing EbA measures.
- Develop criteria for AGLC selection.
- Undertake a diagnostic review of government and community-based organisations in the target Wilayas, to identify where AGLCs are most urgently required.
- Undertake a review of the GIZ methodology to establish AGLCs.
- Establish and/or strengthen AGLCs in the target Wilayas, in collaboration with GIZ (ProGRN project).
- Develop and institutionalize a strategy to upscale and replicate EbA measures implemented through the LDCF project.

#### **Component 2: Climate resilient livelihoods for rural communities based on EbA measures in rangelands in seven Wilayas in the Sahelian Acacia Savannah Ecoregion.**

- Undertake participatory baseline surveys to determine the vulnerability of rangelands and other ecosystems within the management areas of the strengthened and established AGLCs.
- Produce geo-referenced maps of rangelands and fire breaks.
- Innovate methods and techniques for applying EbA approaches to sustainable pastoralism, sustainable rangeland management, and other alternative livelihoods, in collaboration with local communities and researchers, and international networks of scientists and practitioners
- Develop management plans for the AGLCs, incorporating the EbA measures to be implemented through the LDCF project.
- Develop criteria for selection of EbA measures, including techniques to control fires and restored soils.
- Implement EbA adaptation measures, including techniques to control bush fires and restored degraded soils, in collaboration with national and local government and AGLCs.
- Training of the local communities to use and sustain EbA measures implemented in the target Wilayas.
- Establish pilot field schools in collaboration with AGLCs and local communities.
- Undertake socio-economic assessments and facilitate community-driven selection of alternative livelihoods based on the EbA measures implemented in target Wilayas.

#### **Component 3: Awareness and knowledge of EbA and climate resilient livelihoods in the context of pastoralism and rangelands.**

- Develop a systematic/efficient awareness raising strategy on building climate resilience through EbA measures, to share knowledge of disaster risk management and adaptation to climate change.
- Undertake an EbA education campaign in national and local schools and universities.
- Develop a media campaign to raise awareness on the benefits of EbA with an annual focus – at end of rainy season when the threat of bush fires increases – on the importance of improved fire management.
- Undertake stakeholder consultations at national and local level to guide the strengthening of the MDEDD web-based platform, to align the availability of data with stakeholder requests.
- Assess and monitor the performance of EbA measures in collaboration with local research facilities and universities, and disseminate lessons learned through the web-based platform awareness raising strategy to improve future EbA projects.