PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Full-sized Project

THE LEAST DEVELOPED COUNTRIES FUND FOR CLIMATE CHANGE (LDCF) [1]

Submission Date: 17 February 2009

GEFSEC PROJECT ID[2]**:**
GEF AGENCY PROJECT ID:
COUNTRY(IES): Mauritania
PROJECT TITLE: Support to the Adaptation of Vulnerable Agricultural Production Systems in Mauritania
GEF AGENCY(IES): IFAD
OTHER EXECUTING PARTNER(S): Ministère de l'Environnement et du Développement Durable; Ministère du Développement Rural; Ministère de l'Hydraulique et de l'Assainissement
GEF FOCAL AREA: Climate Change

INDICATIVE CALENDAR (mm/dd/yy)	
Milestones	**Expected Dates**
Work Program (for FSP)	JUN 09
CEO Endorsement/Approval	APR 10
Agency Approval Date	MAY 10
Implementation Start	JAN 11
Mid-term Review (if planned)	JAN 13
Project Closing	JAN 15

A. PROJECT FRAMEWORK

Project Objective: to increase the resilience of rural communities to increased water stress and reduced productivity of agricultural and livestock sector as related to climate change impacts.

Project Components	**Inv., TA, or STA**[b]	**Expected Outcomes**	**Expected Outputs**	**Indicative LDCF Financing**[a]		**Indicative Co-Financing**[a]		**Total ($)** c = a+b
				($) a	%	($) b	%	
1. Vulnerable crop production systems adapted to current and future climate change impact	Inv.	Agricultural production more resistant to climate change Suitable production techniques, including soil and water conservation techniques, up-scaled and improved to respond to climate change impacts Agricultural production capacity improved and food security increased Environmental conditions improved to sustain	- Suitable farming and environmental conditions restored under a context of deterioration due to changed climatic conditions. - Quality of crops improved in terms of increased resilience to climatic factors. - Risk associated with possible decreases in crop productivity minimized (leading to a % reduction of crop failure due to increased climatic stress) and % reduction of crop productivity derived from increased pressure of divagating livestock reduced. - Economic vulnerability of rural livelihoods reduced by ensuring a % increase in farmers' income thanks to the diversification of protected crop production (at least two secondary crops in the	1,200,000	44.5	1,500,000	55.5	2,700,000

[1] This template is for the use of LDCF Adaptation projects only.
[2] Project ID number will be assigned initially by GEFSEC. If PIF has been submitted earlier, use the same ID number as PIF.

		agricultural production	oasis) and by ensuring a % increase in wood energy supply (by planting a small scale perimeter of tree species adapted to arid zone).					
2. Increased climate resilience of livestock system	Inv. TA	Integrated livestock cropping systems promoted in the oasis and semi-arid regions to increase resilience of livestock production. Animal resilience increased by improved nutritional intake. The use of treated fodder and sustainable use of multi-nutritional blocks to ensure less dependence on declining rangeland production and sustain production needs. Impact of recurrent droughts on livestock production is reduced	- Integrated livestock cropping systems piloted in 5 oasis and/or potentially irrigated areas - % increase in feed units uptake from valorized fodder to improved animal resilience to climatic stress - Decrease in livestock mortality expected from climate change impact - Decrease pressure on pastoral areas around oasis zones leading to less degradation and better resilience of cropping systems - Improve natural regeneration of arid adapted Panicum species through air seeding in vicinity of the oasis - Improved range management system compatible with rangeland production and capacity in oasis region and semi-arid zone	500,000	41.6	700,000	58.4	1,200,000

3. Increased efficiency and climate-proofed water management systems	Inv.	Understanding and monitoring capacity of climate change impact on water resources for agriculture improved New technologies and water conservation practices promoted Drip irrigation promoted to ensure more efficient use of water in the oasis and semi-arid areas	- Reliable system for water resource monitoring is established in targeted areas - Drip irrigation systems implemented in 8 oasis and/or semi-arid areas - 40 % increase in water use efficiency for irrigation due to the adoption of suitable water conservation technologies. - Breaking water run-off dikes in oasis zones constructed - National and local water management planning consider adequately climate change impact	1,200,000	48	1,300,000	52	2,500,00
4. Capacity building and awareness raising on climate change impact on rural production systems	Inv., TA	National policies and plans for the agricultural sector are made more resilient to the impacts of climate change. Local stockholder's awareness on climate change issues is increased Local knowledge to adapt to climate change is captured and disseminated	- Decision makers trained on increasing the resilience of national/local water management policies (6 sessions) - 15 villages and 40 households targeted by adaptation awareness raising campaigns - Traditional knowledge is captured through case studies and dissemination mechanisms at the local level are designed/promoted - Training materials on adaptation of agricultural production systems to climate change is produced	300,000	37.5	500,000	62.5	800,000
5. Project management and M&E				300,000	37.5	500,000	62.5	800,000
Total project costs				3,500,000	43.7	4,500,000	56.3	8,000,000

[a] List the $ by project components. The percentage is the share of LDCF and Co-financing respectively to the total amount for the component.

[b] TA = Technical Assistance; STA = Scientific & Technical Analysis

B. INDICATIVE CO-FINANCING FOR PROJECT BY SOURCE AND BY NAME (in parenthesis) if available, **($)**

Sources of Co-financing	**Type of Co-financing**	**Amount**
Project Government Contribution	In Kind and Cash	900,000
GEF Agency(ies)	Cash	3,200,000
Others (Spanish Cooperation)	Cash	400,000
Total co-financing		4,500,000

C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT ($)

	Previous Project Preparation Amount (a)[3]	Project (b)	Total c = a + b	Agency Fee
LDCF	0	3,500,000	3,500,000	350,000
Co-financing	0	4,500,000	4,500,000	
Total	0	8,000,000	8,000,000	350,000

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED ADAPTATION BENEFITS TO BE DELIVERED:

Situated in the Saharan region of West Africa, Mauritania fronts the Atlantic Ocean on the west is bordered by Western Sahara on the northwest, Algeria on the north, Mali on the east and southeast, and Senegal on the southwest. Except for the valley of the River Senegal on the south, two thirds of Mauritania is within the Sahara Desert. Mauritania is therefore one of the countries most vulnerable to the effects of desertification. This is the consequence of the winds activity that sweeps the country. Most rain falls during the short rainy season, from July to September, and average annual precipitation varies greatly. In the northern two-thirds of the country – where oasis are found, average rainfall is less than 150 mm where often, isolated storms drop large amounts of water in short periods of time, producing flash floods. A year, or even several years, may pass without any rain in some locations. Almost all the country is under an arid/semi-arid regime. Of the total of Mauritania's land, about 37,5 % are considered as agricultural land , most of it being pasture land : the arable land potential is scarcely more than 500,000 ha (i.e. less than 1 percent of the national territory). The system of land tenure has been in transition since the 1980s. Factors contributing to this transition include government abolition of centuries-old slavery practices involving tribal and ethnic relations between various herding and sedentary communities; government development policies, particularly with regard to land reform and irrigation schemes; and tremendous shifts in land settlement and herding patterns because of drought. Historically, rangeland for herding was controlled through tribal ownership of wells; around oasis, slave groups worked cultivable plots, although traditional noble clans held ownership of the land. In more southerly settled agricultural areas, ownership varied from region to region and village to village, depending on ethnic settlement patterns.

Mauritania is one of the poorest countries in the world. Poverty is estimated at 47 per cent of the population in 2004 and it is largely a rural phenomenon. The agricultural sector contributes about 25% of the country's gross domestic product (GDP), with livestock accounting for about 15% and crop production and fisheries for about 5% each. Crops, livestock and artisanal fisheries are the main sources of income among the population.

Crops: cropping activity in Mauritania is based on a narrow resource base. No more than 0.5% of the land area is arable, and less than 1% of the country receives sufficient rainfall (300 - 600mm) for rainfed cropping. Irrigated cropping is limited to about 40,000 hectares of land along the Senegal River; small-scale irrigation is also practiced on about 5000ha of land in the 200 + oasis in the vast deserts of the Adrar, Assaba and Tagant regions. Flood recession cropping is practiced in the seasonal depressions along the Senegal River, and also in rainfall overflow areas and downstream of small dams built by local populations. Rainfed cropping is practiced only in the Guidimaka region and in small areas along the border with Mali.

Livestock: animal husbandry accounted for 77.2% of the value added in the rural sector in 2003. The national herd in 2004 was estimated at approximately 1.3 million camels, 1.6 million cattle, 5.6 million goats and 8.9 million sheep. Because of repeated droughts, major changes have occurred in herd ownership and the location of production. Herd ownership has become substantially more concentrated, and has passed mostly into the hands of merchants and urban elite. The focus of livestock operations continues to favour accumulation rather than sustainable management.

[3] Include project preparation fundings that were previously approved and exclude PPGs that are awaiting for approval.

Fisheries: Mauritania's waters are rich in fish – exploitation of fish accounts for 4 per cent of GDP, 20 per cent of the country's tax revenues, and 40 per cent of export earnings. Seasonal freshwater fishing is common on the Senegal River and Lake R'kiz, mostly for family consumption. Intake is highly-variable due to droughts.

Climate variability and land degradation are major concerns in Mauritania, a country where agro-pastoral areas and oasis provide the ecosystems which serve as a primary source of water for the cattle, support agricultural and pastoral production, supply firewood and timber, supply crops, and provide the habitat for fauna and flora. The integrity of the ecosystems is threatened by many constraints to sustainable management of natural resources and increased risks of droughts. Although future projections of rainfall conditions in Sahelian countries are still highly uncertain, with both wetter and drier scenarios in the realm of possibility, outputs from 11 GCMs4 suggest that on an aggregate level, precipitation is bound to decline by 2030-2050 during the northern hemisphere winter (December, January, February) and summer (June, July August) – for instance by -21.1% and -14% respectively (A1B scenario). A sustained drying trend or more erratic rainfall has to be considered a real possibility over the medium to long term. Regarding water courses and water resources, climate change is projected to reduce production potential, cause the level of the water-table to fall, and springs and other natural sources of water to disappear. The most vulnerable production systems will be those dependent upon rainwater, especially rain-fed agriculture. Production systems with low or even no vulnerability are pastoral systems where owners are dwelling in urban areas, and semi and/or intensive systems. This demonstrates the need for urgent adaptation and risk management measures to be undertaken with regard to remedying the present country's vulnerability to climate change.

The proposed project aims at increasing the resilience of rural communities to increased water stress and reduced productivity of agricultural sector as related to climate change impacts. Acknowledging the socio-economic importance of these sectors, the IFAD/LDCF-supported intervention will focus on crop production, livestock systems and water resources, as they are the most vulnerable sectors to climate change, but will also benefit impacted natural resources (soil fertility, biodiversity). The proposed project will target hotspots in the regions of Adrar, Tagant, Assaba, Brakna, Trarza, Gorgol, Guidimaka and Hodh Ech Chargui). Oasis areas will receive particular attention, as they are among the poorest regions in Mauritania and their residents are highly vulnerable to the effects of drought and climate change. The areas potentially irrigated will serve as demonstrating pilot hotspots as water and land resources are sufficiently available and more suitable to integrated activities. The project activities will benefit at least 750,000 households and will give particular attention to women and young people that constitute the major vulnerable group.

The proposed IFAD/LDCF-funded operation is articulated around five components embedding various NAPA priorities. The proposed components are impact-oriented mainly leading to investments in the ground and targeting the sectors and groups most vulnerable to climate change. These are:

1) Vulnerable crop production systems adapted to current and future climate change impact.
2) Increased climate resilience of livestock system.
3) Increased efficiency and climate-proofed water management.
4) Capacity building and awareness raising on climate change impact on rural production system.
5) Project management.

The rationale underlying the need for the LDCF intervention in the Mauritanian agricultural production sector is based on the following assumptions expected under a business as usual scenario:

- decrease in crop productivity and quality;
- changes in farming conditions that would in turn induce changes in the crop area and land use;
- increased risk of drought and water scarcity resulting in water deficits for human consumption and agriculture needs, particularly in the oasian and semi-arid zones;
- increased irrigation requirements, as a consequence of increased drought and heat stress, and decreased rainfall patterns;

[4] General Circulation Models: computerized simulation tools used to forecast climate changes ; the IEPC considers a range of over 20 socio-economic development scenarios; the A1B scenario is one of them.

- worsening of conditions suitable for livestock production in terms of various livestock production systems (health, productivity, resistance to heat stress, etc.), loss in forage quantity and quality, and changes in grazing patterns.

In turn, these impacts would further determine increased vulnerability of rural livelihoods by:
- reducing food security;
- reducing farmers' income and consequently lowering their capacity to cope with unexpected climatic stress (e.g. severe drought) and wood energy shortages;
- increasing migration from rural areas to urban settings, reducing rural work force to old age and women labor force;
- reducing availability of land for grazing and agriculture from pressure of agriculture on more fertile land on the one hand and agriculture acreages on the other hand.

The **first component** will address the risk of possible reduction in crop productivity and quality as a consequence of climate change impact. The approach followed under this component will aim on one hand, to restore/maintain optimal farming conditions; and on the other hand, to minimize the risk of possible decreases in crop productivity and quality. For these purposes the IFAD/LDCF supported interventions under this component will improve cultivation methods and will introduce new drought-resistant/high-yield crops, including in the oasis area and semi-arid zones. In more detail, the project will support activities such as: (i) the identification and test of new climate-resilient/improved crop varieties suitable for various zones that allow for higher adaptation of cropping system; (ii) the improvement of cultivation methods, including by promoting suitable traditional practices; (iii) the promotion of suitable sustainable land management practices (i.e. rehabilitation of soil fertility, promoting seasonal rangeland capacity for grazing) and water conservation techniques as a way to better adapt key ecosystems and production systems to the impact of increased land degradation.
Expected adaptation benefits under this component are:
- Restored suitable farming conditions under a context of deterioration due to changed climatic conditions.
- Improved quality of crops in terms of increased resilience to climatic factors.
- Minimized risk associated with possible decreases in protected crop productivity. This would lead to a % reduction of crop failure caused by increased climatic stress and a % reduction of crop productivity derived from increased pressure of divagating livestock.
- Reduced economic vulnerability of rural livelihoods by ensuring a % increase in farmers' income thanks to the diversification of crop production (at least two secondary crops in the oasis) and by ensuring a % increase in wood energy supply thanks to planting a small scale perimeter of tree species adapted to oasis region and/or arid zone.

The **second component** will aim to increase the resilience of livestock production by promoting an integrated livestock cropping system, particularly in the oasis region. Reduced rainfall and its variability and the recurrent drought will cause loss of livestock, reduction of fodder, decrease of the biomass and a reduction of pastoral spaces. In turn, this will determine livelihoods failure, including threats to food security. In order to address these constraints, this project component will adopt a two-pronged approach cantered on:
- promotion of integrated livestock cropping system in the oasis and/or potentially irrigated areas;
- treatment of unrefined fodder and promote cost-effective and relevant use of multi-nutritional blocks;
- air seeding of oasis vicinity to promote rangeland of natural regeneration of arid adapted Panicum species;
- introduction of range management system compatible with rangeland production and capacity in oasis region and semi-arid zone.

The first activity line will aim to promote the development of fodder crops, giving value to agricultural by-products and increasing the production per beast and per hectare. The integrated approach would ensure less dependence on extensive grazing systems that are likely to be more affected by climate change and increased risk of drought. The second type of activities will enable better use by the livestock and will improve the quality of unrefined fodder resources and will enable the animals to cope better with the lack of fodder in the dry season. The third type of activities will foster rangeland regeneration by disseminating Panicum seeds by air just before the rainy season as this has been successfully experimented for years in the triangle of Boutilimit-Akjoujt-Nouakchott by the Ministry of Environment. The fourth type of activities will introduce grazing management practices more compatible with current climate variability. As a result of these improvements, animals' health and productivity will be improved to

better face impacts of climatic changes. Also, these activities will contribute to diversifying the income of small-scale owners and agro-breeders and will create employment in the area of manufacture of multinutritional blocks and their marketing.

The **third component** will focus on water resources, particularly by promoting water-saving irrigation methods in oasis areas. This component entails the implementation of adaptation measures such as the construction of breaking water run-of dikes in pluvial and oasian areas; promotion of water efficient technologies in oasian zones and dissemination of drip irrigation in valley and oasian zones. Also, the project will support the creation of an enabling environment for sustainable management of water resources by ensuring improved medium and long term planning to sustain water resources in an increasingly arid climate. Under this component the project will:

- establish reliable system for water resource monitoring in targeted areas;
- implement water saving systems such as drip irrigation systems in 8 oasis and/or semi-arid areas (valley);
- increase water use efficiency for irrigation due to the adoption of suitable water conservation technologies;
- construct breaking water run-off dikes in oasis zones and/or semi-arid areas;
- integrate climate change into national and local water management planning.

The **fourth component** would include: local knowledge promotion and awareness rising campaigns on the climate change impact on water resources and agriculture at the community level; documentation and dissemination of information related to traditional practices for sustainable land management and water conservation; training of farmers and their organizations in adaptation to drought; build the capacity of central and local level institutions on the integration of climate change related issues within the district development process. Along this component training materials and case of studies will be produced and made available to the stakeholders. The capacity building plan will be established under the supervision of the Ministry of the Environment and Sustainable Development in view of ensuring that climate change issues are taken into account within both the agricultural production and livestock systems.

Project management will cover both the establishment of an M&E system and the project management. Under this component the use of geographic information systems (GIS) for both water resources management and land management could be introduced. Lessons learned will be disseminated through IFAD's regional knowledge network FIDAFRIQUE and other similar knowledge vehicles (e.g. TerrAfrica KM platform), thereby assuring regional coverage. Also a database for all climate change related issues including adaptation activities could be established. This would contribute at up-scaling and replicating successful experiences in other regions.

The total project cost will be US$ 8,000,000 to which the LDCF will contribute with US$ 3,500,000, excluding the preparatory grant (US$ 100,000) and the total agency fees[5] (US$ 350,000). Total co-financing (US$ 4,500,000) will be provided by IFAD, the Government and others (Spanish cooperation).

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS:

The proposed project responds to the urgent and immediate adaptation needs identified by the Government of Mauritania in its National Adaptation Programme of Action (NAPA). In more detail, the NAPA of Mauritania identifies livestock farming, water and agriculture as key priority sectors for adaptation, followed by forestry and semi-arid ecosystems. Also, the proposed activities are aligned with the Government's development strategy as defined in the second Mauritanian poverty reduction strategy paper (CSLP II) and contributes to the realization of Mauritania's national development objectives, namely, those linked to (i) the economic activities and well-being of the poor, (ii) the development of the agricultural and rural sector, (iii) the development of human resources and access to basic infrastructure, and (iv) institutional development achieved through good governance and the participation of all actors. Furthermore, as the NAPA, the proposed project promotes synergies with national strategies to implement other relevant UN Convention on environment, namely the UNCCD and the UNCBD. The proposed project is also consistent with both the National Environment Action Plan (NEAP) and the National Strategy for Sustainable Development (SNDD) that constitute the general framework for the political environment of Mauritania. Its objectives, based on Agenda 21 recommendations, are to establish an overall framework for the management and protection of the global environment.

[5] Excluding PPG fees.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH LDCF ELIGIBILITY CRITERIA AND PRIORITIES:

The present proposal has been developed in conformity with the LDCF eligibility criteria. The project proposal respects the principle of country ownership having been developed in consultation with national stakeholders, as well as by taking into account other relevant documents. Also, the project proposal responds to the priority activities identified by the Government of Mauritania in their NAPA and it has been developed with the aim of ensuring cost-effectiveness and sustainability also after the project completion. The project design criteria have been respected including by describing the added value of the LDCF-supported intervention (additionality). Finally, the proposed activities take into account other existing projects in the country carried out by different actors, in order to avoid duplications and ensure synergies with other activities undertaken in the same area of the proposed project.

D. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

IFAD, its United Nations partners and the Government of Mauritania place great importance on the adoption of collaborative approaches and are seeking complementarities with other development partners, as envisaged by the Paris Declaration on Aid Effectiveness and the harmonization and alignment objectives of the United Nations. Within this context IFAD has contributed to the joint donor intervention matrix for 2006-2010 in response to the second Mauritanian poverty reduction strategy paper and related action plan. As a result, the areas of IFAD intervention fall within the strategic axes of Mauritania's poverty reduction strategy paper and are coordinated with the interventions of other donors.

IFAD is leading the Terrafrica process in Mauritania though the preparation and implementation of a country strategic investment framework for sustainable land management. An ad hoc SLM committee was established by law and is coordinating all SLM investment in the country, including activities that aim at mitigation and adaptation to climate change through sustainable land management. Therefore, coordination with the IFAD/GEF supported project "Participatory Environmental Protection and Poverty Reduction in the Oasis of Mauritania" will be ensured.

Most of the ongoing climate change adaptation-related projects in the country are centred on fishery and coastal management. Examples are UNDP/SPA Adaptation to Climate and Coastal Change in West Africa project and the IDRC Adapting Fishing Policy to Climate Change project. Therefore, they are not of direct relevance to the proposed project. However, with respect to capacity building, link may be established with the regional CIDA-supported Climate Change Adaptation Capacity Support project implemented by the AGRHYMET Regional Centre (ARC). Coordination will be ensured with the WFP work in providing food security of poor rural households and mitigate vulnerability to unpredictable weather conditions through environment protection.

Finally, the proposed project will ensure coordination with and receive co-financing from an IFAD programme, currently under preparation, entitled "Support to Rural Poor to address Climate Change in Africa" that aims to reduce climate change risks and vulnerability in selected poor rural communities in Africa by developing community-based adaptation and mitigation activities through local risk management, expanded and climate-proofed options and land productivity, increased individual skills, and expanded community participation in decision making and implementation. Mauritania is part to this programme.

E. DESCRIBE ADDITIONAL COST REASONING:

Baseline scenario:
The agriculture sector is a major contributor to the economy of Mauritania (see section A). Under a business as usual scenario without adaptation, climate change is likely to reduce agriculture's share of GDP. According to a study on the impact of climate change on agriculture in Africa[6] Mauritania is expected to face an average percentage change in agricultural GDP of 5-15 (depending on the model) by 2100 due to climate change. Also, the study estimates that in Mauritania agriculture's share of GDP would shrink to 7.44%.
Without considering climate change, business as usual rural development in Mauritania aim to achieve improved, diversified and sustainable livelihoods for poor rural women, men and youth. IFAD's strategy in the country, fully aligned with the CSLP II, pursue the following three strategic objectives: (a) strengthen the institutions of the rural poor using community-driven development approaches; (b) promote sustainable rural financial services; and (c) achieve sustainable agricultural development and food security. The proposed project will be linked to the new IFAD project "Value Chains Development Programme for Poverty Reduction". The programme's objective is to improve the incomes and living conditions of the target group, women and young people in a sustainable manner by developing seven agricultural value chains. Given the surge in food prices, the economic justification for this project is to substitute imports with increased national production.
The proposed approach under a business as usual scenario is therefore purely development-oriented, with a focus on market and economic growth. Despite recognizing that, together with locust outbreaks, climate change is one of the main risks to the achievement of rural development objectives in Mauritania. Current development scenarios have not successfully integrated climate change into sectoral planning. In particular, the baseline approach does not consider the possible modifications that climate change may cause to the conditions upon which development efforts have been designed. In this baseline situation, climate change will lead to a reduction in agricultural production potential and impact on its upstream environment (mainly due to crop failure and natural resources degradation), will increase the vulnerability of the livestock production systems, will cause forced migration and in turn induce changes in terms of land use and natural resource management at large. Furthermore, under a business as usual scenario, climate change will determine a decrease in the water-table and other natural sources of water. As far as production systems are concerned, the most vulnerable and the most affected activities are those dependent upon rainwater, especially rain-fed agriculture that is predominant in Mauritania. With regard to animal health and the survival of the livestock, the method of managing the herds, transhumance and heavy concentration of animals around wells, tend to promote contagious diseases. Furthermore, periods of shortage of fodder lead to problems associated with malnutrition and make animals less resistant to pathogens diseases and other environmental factors. All the above elements are expected to hamper the achievement of business as usual development objectives if adequate adaptation measures are not put in place. In particular, the development of agricultural value chains may fail due to unforeseen losses in agricultural production, decrease of natural ecosystems services and livestock productivity and reduction in water availability.

Adaptation scenario: The proposed NAPA implementation project will cover the costs associated to climate change in the agricultural sector. More specifically, the project will try to lessen the projected declining trend of the agricultural production system expected under a business as usual scenario. This will be done through a series of investments that while ensuring adaptation benefits for the local population in the short-medium run, will also minimize long-term impacts of climate change in the agriculture production and its supportive natural resources services. The objective is to maintain/increase existing farming conditions even in a context of climate change, in a way to maintain unaffected the circumstances on which current rural development efforts are built. Therefore, the proposed intervention will ultimately produce a long-term sustainable and climate-proofed development benefit. The adaptation-related costs supported by the IFAD/LDCF proposed project are mostly associated to additional investments in the ground, but will cover also targeted capacity building activities at both the government and the local levels. The table below summarizes the activities undertaken with the support of the LDCF to address climate change-related issues that are not addressed in the baseline.

[6] R. Mendelsohn, A.Dinar, A. Dalfelt (2000).

Components	CC-related issues not addressed in the baseline	Proposed adaptation measures
Component 1. Vulnerable crop production systems adapted to current and future climate change impact	- Expected decrease in crop productivity (increased risk of crop productivity variability) and quality - Changes/deterioration of farming conditions - Increase frequency of crop failure - Reduced capacity of rural livelihoods to cope with climate change impact (increased food insecurity, reduced farmers' income) - Increased land degradation - Desertification due to water resources deficit, loss of soil structure, land abandonment	- Introduction of suitable climate-resilient/improved and protected crop varieties - Improve soil and water management practices (i.e. irrigation, rehabilitation of soil fertility) to make farming systems more resilient to climatic stress - Livelihood diversification, particularly by switching to alternative crops/change of cropping mix, secured and supported by a local wood energy supply.
Component 2. Increased climate resilience of livestock system	- Increased mortality of livestock - Loss of fodder - Biomass decrease - Reduction of pastoral spaces - Decrease in water availability for livestock - Current grazing management no longer suitable under changed climatic/environmental conditions. - Carry capacity of rangeland is reduced due to climatic impact	- Promotion of integrated livestock cropping system in the oasis; - Treatment of unrefined fodder and promote cost-effective and relevant use of multi-nutritional blocks. - Introduction of grazing management practices more compatible with current climate variability.
Component 3. Increased efficiency and climate-proofed water management systems	- Decrease in available water tables - Increased irrigation requirements - Decrease in water quality for irrigation and human use.	- Increase water use efficiency by promoting water-saving irrigation methods in oasis area - Establish a good monitoring system of water use - Erosion control - Mainstreaming water in planning
Component 4. Capacity building and awareness raising on climate change impact on rural production systems	- Lack of knowledge and preparedness at the government level to mainstream climate change into sectoral planning (agriculture and water). - Lack of awareness on climate change impact at the local level. - Lack of coordination for adaptation planning and implementation.	- Increased knowledge at the local level to reduce sensitivity to climate change impact - Awareness raising campaigns focused on adaptation - Strengthened institutional capacity (both at local and central levels) to integrated climate change within district development processes.
Component 5. Project management and M&E		

F. INDICATE THE RISK THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MITIGATION MEASURES:

The participatory development approaches that are driving this IFAD/LDCF operation are highly dependent on the quality of the staff deployed in the field teams and the provision of adequate incentives and the participation of women in the process, cultural traditions may prejudice the project's attempts to give women a greater voice; land owners may resist to diversification of crops or the promotion of new irrigation techniques.
Some risks could be related to the willingness of communities to contribute as required to the cost of the investment with a sustained involvement of farmer groups in the implementation of the NAPA activities. Risks will be mitigated through the project approach itself, based on participatory approaches and empowerment of local activities (women and marginal groups in particular) coupled with a strong effort on awareness raising that would help in initiating and sustaining farmer's interest in the adaptation activities proposed under this NAPA project. Some forms of incentives

could be developed by the project to encourage highly performing farmers or successful implementation of innovations in relation to water resource management, Sustainable land management or pertinent local knowledge.

The political instability in the country may represent another risk. However, IFAD's past experience in Mauritania has shown that projects and programs can remain fully operational during periods of political instability.

G. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

The project is mainly investment-oriented with a view to maximize the impact per LDCF dollar. Project management and M&E costs are maintained at the lowest possible level while coupling the IFAD project with the proposed NAPA project in terms of project management to reduce transaction costs. Investments in an area/sector that are significantly affected by drought, soil degradation and climate change through innovative techniques and well targeted investments would lead to increased cost-effectiveness. Reduced cost in relation to community organization and engagement will further reduce the share of "soft activities" leading to stronger investment and higher return.

H. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY: Between 1980 and 2005, the Fund financed 11 projects in Mauritania at a total cost of US$250 million. About 40 per cent of the cost was covered by IFAD loans (for US$90 million). Mauritania is therefore one of the countries of Western and Central Africa that has benefited most from IFAD support over the past 25 years. Projects have been implemented at a rate of one new project every two years and an investment of US$30 per capita. IFAD-supported interventions in Mauritania have allowed IFAD to develop particular expertise and insights in a number of sectors such as community driven development (CDD), building rural microfinance services, agricultural production and food security. IFAD has been contributing to the donor's joint intervention matrix for 2006-2010 in response to CSLP II. As a result, the future areas of IFAD intervention fall within the strategic axes of CSLP II and are coordinated with the interventions of other donors. Thus, with particular reference to (i) the overarching objectives of CSLP II; (ii) the IFAD Strategic Framework 2007-2010; and (iii) the experience of past and ongoing interventions and the availability of incremental financial resources for development.

IFAD has a long history and expertise in Mauritania working at grass root level with communities that are highly vulnerable to climate change. Many forms of adaptation have been already implemented by IFAD in the oasis program, Maghama and PASK projects. IFAD has a clear comparative advantage to support the government in implementing its Agricultural-related NAPA priorities. Furthermore, IFAD is leading the TerrAfrica SIP process in the country and is finalising a CSIF for SLM in coordination with key national and international partners (engaged in SLM in the country). The CSIF entails *inter alia*, an assessment of climate change vulnerabilities and linkages between land degradation and analyses climate change. With IFAD's and GEF support, a national SLM committee was established in 2008.

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

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT:

(Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

NAME	POSITION	MINISTRY	DATE *(Month, day, year)*
LAFDAL, Mohamed-Yahya	Directeur de la Programmation, de la Coordination Intersectorielle et de la Coopération (DPCIC)	Ministère délégué auprès du Premier Ministre chargé de l'Environnement	**02/09/2009**

B. AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with LDCF policies and procedures and meets the LDCF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date *(Month, day, year)*	Project Contact Person	Email Address Telephone
Dr Rodney Cooke Acting Coordinator Global Environment & Climate Change (GECC) Unit Programme Management Department (PMD) IFAD		02/17/2009	**Mr Naoufel Telahigue** Programme Manager GECC Unit PMD, IFAD	n.telahigue@ifad.org Tel: +390654592572