FAO/GEF PROJECT DOCUMENT ANNOTATED TEMPLATE

Project Title:	Integrated ecosystem management project for the sustainable human development in Mauritania
FAO Project symbol:	GCP/MAU/001/GFF
GEF Project ID:	9294
Recipient Country(ies):	Mauritania
Executing partners:	Ministry of Environment and Sustainable Development (MEDD)
Expected EOD (Starting Date):	July 2018
Expected NTE (End Date):	June 2023
Contribution to FAO's Strategic Framework: (Indicate as appropriate)	June 2023
Contribution to GEF TF Focal Area Strategic Objectives and Programs: Contribution to Climate Change Adaptation Strategy Strategic Objectives (LDCF/SCCF projects):	Strategic Objective/Organizational Outcome: SO2 and SO3: 2.1 Countries adopted practices to increase productivity sustainably while addressing climate change and environmental degradation in agriculture, forestry and fisheries 3.1 Rural poor and rural poor organizations empowered to access productive resources, services and markets Country Programming Framework(s) Output: Government Priority 3: Sustainable management of natural resources in the face of climate change for a sustainable and resilient economy. Output 3.1: Capacity of national services and local communities in the triangle of hope, El Atf, and the Great Green Wall, strengthened in regard to ecosystem management. Regional Initiatives/Priority Area: Resilience, water scarcity and smallholder agriculture
Environmental and Social Risk Classification	Moderate risk
Gender Marker[1]	GEN 2
Financing Plan: GEF/LDCF/SCCF allocation: Co-financing: Sub-total co-financing: **Total budget:**	**TOTAL: USD 30 363 381** **GEF: USD 8 222 505** Government of Mauritania: USD 1390 876 Ministry of Livestock: USD 4 000 000 Ministry of Agriculture: USD 4 000 000 Ministry of Water Resources and Sanitation: USD 5 000 000 Ministry of Environment and Sustainable Development: USD 3 400 000 Tadamoun: USD 3 300 000 FAO: USD 1 050 000 **TOTAL Co-financing: USD 22 140 876**

Executive Summary

Mauritania is one of the poorest countries in the world, ranking 157th out of 187 countries according to the 2016 Human Development Index 2016. Poverty in the country is exacerbated by environmental and climate factors, such as land degradation, water scarcity and the low levels of access to productive land, combined with frequent droughts. Most of the population living in rural areas is comprised of agro-pastoralists, who mix sedentary lifestyles with transhumance. Agricultural productivity is low, and production is concentrated in areas around water bodies, particularly the Senegal river. Because most livelihoods are based on natural resources – land, water, and biodiversity – the ongoing degradation of fragile ecosystems is putting communities and the environment at risk. Addressing this challenge has been difficult so far, due to the following inter-related barriers:

(i) Lack of an integrated and ecosystem-based landscape approach to supporting sustainable human development;

[1] See Guidance Note on 'Gender Mainstreaming in project identification and formulation'.

(ii) Lack of technical expertise in the monitoring, planning and management of ecosystems; and
(iii) Lack of diversification in the livelihoods base to support lasting investment in regenerating natural ecosystems.

The proposed project is a joint effort by the Ministry of Environment and Sustainable Development (MEDD), the FAO and the GEF, to address the above-mentioned barriers. The **development objective** is to sustainably improve the livelihoods of the rural population in three southern Mauritania landscapes, and the natural resource base upon which they depend.

The **project objective** is to increase sustainable human development through the restoration of ecosystem services and an integrated ecosystem management approach in three southern Mauritania landscapes. The project will intervene in three landscapes that were selected through a participatory process on the basis of the critical ecosystem services they provide to local populations: (1) El Atf, (2) Triangle de l'Espoir (3) Great Green Wall.

The project will be implemented through the following components:

Component 1: *Integrated and participatory planning and management for the sustainable development of ecosystems*

This component will provide support to the relevant governmental and territorial authorities to better understand and manage the ecosystems, using updated, relevant information and based on a participatory approach to land use planning. In parallel, the project will work with the government to support the designation of a new Biosphere Reserve in El Atf, an ecosystem with high biodiversity value which is currently under threat.

Component 2: *Conservation, restoration and sustainable management of the landscapes*

Under Component 2, the project will support the rehabilitation of key ecological services that sustain livelihoods. This will include the conservation and sustainable management of degraded rangelands, reforestation using high-value resilient tree species, accompanied by the required training for local communities and authorities. In order to ensure that the pressures on land cover are reduced and to avoid the depletion of soil/biomass carbon stocks, the project will also deploy interventions to promote the use of alternative technologies, including biogas and improved cook stoves. The project will also work with communities to rehabilitate, construct and upgrade natural and man-made water conservation infrastructure, including ponds, wadis, reservoirs and wells.

Component 3: *Reduction of pressure on ecosystems through income generation and funding mechanisms*

This component will assist in the reduction of pressures on ecosystems by adopting a two-pronged strategy. First, technical assistance will be provided to local producers and groups so as to increase productivity from existing agro-pastoral value chains. This will include technical training, using the tried and tested Farmer Field School approach, as well as the provision of key productive assets, particularly to increase value addition, and the production and dissemination of threatened indigenous crop varieties. In addition to this, the project will work with communities and producer groups to identify promising alternative supply chains to diversify and increase their income.

Component 4: *Knowledge Management*

This includes activities to ensure a systematic results-based monitoring and evaluation of project's progress and to promote the wider dissemination of project information, data and lessons learned for replication in other areas.

Project Outcomes will include (i) the use of land and natural resources is informed and governed by an integrated, participatory and gender sensitive approach; (ii) land degradation is reduced and vegetation cover is restored through a participatory and integrated ecosystem approach; (iii) sustainable use and management of water reserves for increased water availability during dry spells; (iv) increased, diversified and stable sources of income for the local population through more sustainable exploitation of natural resources; (v) the achievements and lessons of the program are documented and replicated.

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ACRONYMS

AFOLU Agriculture Forests and Other Land Use
AMAD Association Mauritanienne pour l'Auto-Développement
APFS Agro Pastoral Field Schools
APGMV Agence Panafricaine de la Grande Muraille Verte
BR Biosphere Reserve
CBD Convention on Biological Diversity
CNRADA Centre National de Recherche Agronomique et de Développement à
CNERV Centre National de l'Elevage et de Recherche Vétérinaire
CNRE Centre National de Ressources en Eau
CRD Commissions Régionales de Développement
CREDD Conseil Régionaux de l'Environnement et du Développement Durable
DPCID Direction de la Planification, Coordination Intersectorielle et des Données
DDFA Direction du Développement des Filières Animales
DDFCA Direction du Développement des Filières et du Conseil Agricole
DGAT Direction Générale de l'Administration Territoriale
DGCT Direction Générale des Collectivités Territoriales
DH Direction de l'Hydraulique
DPN Direction de la Protection de la Nature
DREDD Délégations Régionales de l'Environnement et du Développement Durable
DSIA Directions des Statistiques de l'Information Agricole
DSV Direction des Services Vétérinaires
GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit
GRET Professionals for Fair Development
IGMVSS Initiative de la Grande Muraille Verte pour le Sahara et le Sahel
ISET Institut Supérieur d'Enseignement Technologique
MA Ministère de l'Agriculture
MASEF Ministère des Affaires Sociales de l'Enfance et de la Famille
ME Ministère de l'Elevage
MHA Ministère de l'Hydraulique et de l'Assainissement
MIDEC Ministère de l'Interieur et de la Décentralisation
MEDD Ministère de l'Environnement et du Développement Durable
NAPA National Adaptation Programme of Action
NR Natural Resources
NTFP Non Timber Forest Products
PAHABO Projet Aménagement Hydroagricole dans le Brakna Ouest
PANEDD Plan d'Action National pour l'Environnement et le Développement Durable
PARSACC Projet d'Amélioration de la Résilience des communautés et de leur Sécurité Alimentaire face aux effets néfastes du Changement Climatique
PANE Plan National pour l'Environnement
PASK Projet de lutte contre la Pauvreté dans l'aftout du Sud et la Karakoro
PDC Plan de Développement Communal
PDRI Plan de Développement Rural Intégré
PGRIE Projet de Gestion Intégré des Ressources Eau
PNDA Plan National de Développement Agricole
PNISER Programme National Intégré des Services d'Eau Rurale
PRAPS Projet Régional d'Appui au Pastoralisme au Sahel
RIMRAP Renforcement Institutionnel en Mauritanie vers la Résilience Agricole et Pastorale
SNDD Stratégie Nationale de Développement Durable
SNEDD Stratégie Nationale de l'Environnement et du Développement Durable
UNCCD United Nations Convention to Combat Desertification
UNFCCC United Nations Framework Convention on Climate Change

SECTION 1 – INTRODUCTION

1.1 COUNTRY/REGIONAL CONTEXT

1.1.1 Socio-economic development context

1. The Mauritanian population was estimated to be at 4,167,000 in 2016, with an average annual growth rate of 2.5%[2]. The urbanization rate is estimated to be at 3.5% annually with an estimated 59% of the population now living in urban centres[3]. This rapid urbanization rate has been spurred by an exodus from rural areas, where a combination of human and climate-induced factors and feed-back mechanisms has been leading to the degradation of the productive base for almost a third of the country's population. However, despite urban migration, the absolute number of nomadic and rural populations has increased in the last 25 years because of population growth. There is also a higher percentage of women in rural areas than in urban areas due to the migration of men in search of employment in the cities.

2. Mauritania remains one of the poorest countries in the world, ranking 157th out of 187 countries as assessed by the Human Development Index in 2016. Indeed, 44.4% of the population lives in poverty and 25.1% of the population lives in extreme poverty. However, there are wide differences between urban and rural areas: over 61% of rural dwellers and 25% of urban residents[4] earn less than 1.25 dollars a day.

3. According to the 2010 Millennium Development Goals (MDG) report from the United Nations (UN) in Mauritania, successive strategies to reduce poverty did not succeed in rural areas. Such limited success in fighting poverty can be explained by the very low impact of the agricultural and pastoral production development strategies, which remain very uneven and are substantially declining[5].

4. Mauritania's economy relies on three economic sectors: (i) agriculture and livestock (representing 21.9% of GDP), (ii) fisheries (representing 20% of budget revenues and 45% of foreign currency earnings) and (iii) mining and extractive industries (making up 30% of government revenue)[6]. Natural wealth represents approximately 45% of the total figure. Renewable resources account for slightly less than two-thirds of natural resources, with fisheries alone equalling about one-fourth of natural wealth. This is good news for Mauritania, as sound management of these resources may ensure a constant flow of resources in the future and therefore - with adequate policies - the achievement of the same or higher levels of welfare for future generations. On the negative side, however, the ratio of net adjusted savings over gross national income is estimated to have been negative since 2006, meaning that the wealth of the country is being depleted."[7]

1.1.2 Water Resources

5. As one of the driest Sahel countries, Mauritania is at constant risk of drought and desertification and its natural environment, human and animal populations are facing challenges related to dwindling sources of fresh water. Limited rainfall in recent years has only exacerbated the overextended water system and hastened the decline of the water reserves. In addition, salinity levels have risen and desertification has contributed to the sedimentation of waterways. In aquatic ecosystems, invasive alien species such as typha have invaded waterways.

6. Water scarcity and recurrent drought are an obstacle to the sustainable development of Mauritania's population. Water access and supply (infrastructure, services and institutional capacity), water harvesting, water use efficiency and productivity still are very poor in Mauritania. Rates of access to improved sources

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[2] http://data.un.org/CountryProfile.aspx?crName=mauritania

[3] https://www.cia.gov/library/publications/the-world-factbook/geos/mr.html

[4] http://www.ruralpovertyportal.org/country/home/tags/mauritania

[5] Nations Unies. 2010. Rapport sur les progrès vers l'atteinte des objectifs du millénaire pour le développement (OMD) en Mauritanie. http://www.mr.undp.org/content/mauritania/fr/home/library/mdg/rapport_OMD_2010/

[6] https://www.cia.gov/library/publications/the-world-factbook/geos/mr.html

[7] World Bank, 2014, Mauritania Economic Update.

of water remain low, with an estimated 50% in rural areas[8]. There is nearly no treatment of water in rural areas, with the same water being used for drinking, livestock and irrigation.

7. Nearly 70% of freshwater withdrawals in Mauritania are dedicated to agriculture, an estimated 1.7 billion cubic meters annually. Groundwater reserves are not well documented, but are estimated to be 150 to 200 billion cubic meters, out of which only 0.4 billion cubic meters are renewable. Over-pumping often leads to rapid decline in water tables, at rates which exceed recharge through rainfall. Despite the presence of 405 dams and dikes, water scarcity and the low rates of water use efficiency mean that agriculture remains a low-value development avenue for most people, leading further and further towards the degradation of land and biological resources, and the gradual abandonment of settlements.

1.1.3 Land and land cover

8. Mauritania's total land area is 1,030,700 km^2. Apart from the Senegal River flood plain which is suitable for cropping, the rest of the country is made up of desert where sparse rainfall allows for nomadic livestock husbandry. Arable land represents only 0.5 % of Mauritania's area, or 502,000 hectares, of which only 50,000 to 220,000 hectares are currently being used. The sylvo-pastoral zone covers 19,281,000 hectares, which have been largely affected by the drought of recent years. The zone's degradation has been compounded by the translocation of sand dunes and overgrazing which has led to a loss of total area.

9. Land degradation and soil erosion are also made worse by land clearing for small-scale agriculture, overgrazing and the resulting disappearance of vegetative cover. In addition, the unsustainable use of forest resources as a primary source of energy (i.e. charcoal) contributes to land and soil degradation. This in turn leads to the depletion of carbon stocks in soils and forests, which represented in 2012 a net sink of 2,155 Gt of CO_{2e}[9]. It also leads to the inability of soils to retain moisture, speeds up run-off and accelerates the overall aridity of the ecosystem. Mauritania's last forest inventory dates back to the 1980s. It accounted for 13.8 million hectares of the country's area.

10. Mauritania has 30 "forêts classées" or semi-protected forests, half of which are located in the Senegal River valley. The FAO estimates that 5,000 hectares of forests and 10,000 hectares of other "wooded areas" are lost annually (FAO, 2010). These 30 forests cover a total area of 48,000 ha. It must be noted that the total area of classified forests is currently used for agro-pastoral purposes and the land is highly degraded. Forests are mainly found in Southern Mauritania: (i) along the Senegal River (19 classified forests – 22,000ha – Wilayas Trarza, Brakna, Gorgol); (ii) along the Karakoro (5 forests – 2,500ha – Wilayas Guidimakha); (iii) in the Assaba Wilaya (2 forests – 16,000ha); (iv) in Kiffa (3 forests – 6,000ha – Wilaya Tagant); and 1 forest in the Hodh El Gharbi Wilaya (1,500ha). The *Acacia nilotica* dominates these forests, though other tree species include: *Acacia sieberiana*, *Ziziphus mauritiana*, *Piliostigma reticulatum*, *Capparis corymbosa*, *Acacia macrostachya*, *Mitragina inermis*, *Acacia albida, Acacia raddiana, Acacia seyal, Balanites aegyptiaca*, and more.

1.1.4 Biodiversity

11. Mauritania is host to 1,100 plant species, 61 mammal species (10 threatened[10]), 172 bird species (2 threatened), 72 reptile species (2 threatened), 3 amphibian species, and 117 fish species[11], with species such as the green turtle (*Chelonia mydas*), the african wedgefish (*Rhynchobatus luebberti*) and the monkfish (*Squatina aculeata*) being considered endangered. Other species, including many freshwater fish, which were an important source of subsistence for rural communities in the country (e.g. in the Konkassa Pond), have either disappeared (e.g. the nile perch, *Lates niloticus*) or are becoming rare (e.g. the catfish, *Clarias gariepinus*).

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[8] World Bank

[9] Mauritania, Third National Communication to the UNFCCC

[10] Data on at risk species from 2002. More recent data was not available at time of writing, but will be sought during the project preparation phase.

[11] http://www.encapafrica.org/documents/biofor/MR118.119.Final.pdf

12. In terms of agro-biodiversity, the country hosts more than 200 date palm cultivars, endemic crop wild relatives and endemic varieties of cultivated crops, as well as cereal cultivars such as rice, maize, sorghum and wheat[12]. The West and Central African subregion, including Mauritania, is the origin of some food crops and contains others that have been grown there long enough to have developed substantial diversity. The subregion is widely acknowledged as the primary centre of diversity for millet (*Pennisetum spp.*), cowpea (*Vigna unguiculata*), fonio (*Digitaria exilis*), yam (*Dioscorea rotundata, D. cayenensis, D. dumetorum, D. bulbifera*), African rice (*O. glaberrima Steud.*), Bambara groundnut (*Vigna subterranean*) and oil palm (*Elaeis guineensis*). It is also the secondary centre of diversity for sorghum (*Sorghum spp.*) and robusta coffee (*Coffea canephora*). In addition, several introduced crops (e.g., pineapple, groundnut, cotton, cocoa, rubber, cocoyam, maize, cassava, sweet potato, tobacco, banana, plantain, citrus, coconut, sugarcane, mango, taro and Asian rice) have developed genetic complexes and wild relatives that are well adapted to the environmental conditions (IPGRI et al. 1997).[13] The agro-biodiversity in Mauritania is eroding rapidly, with landraces disappearing because of demographic pressure (cultivating on poor and degraded lands), salinization of soils due to poor water management, and poor pesticide and fertilizer management.[14]

13. With respect to domestic animal genetic diversity, about 30% of all farm animal breeds worldwide are at risk of extinction. The situation for Mauritania's livestock is particularly acute for example for the Maure breed of the Zebu, for which Mauritania is a hotspot.[15]

14. The World Watch List for Domestic Animal Diversity 2000 indicates for Mauritania a considerable lack of data in order to draw conclusions on the risk level of extinction for the registered breeds in the global databank for farm animal genetic resources. Genetic erosion of animal breeds can be explained partially by the lack of investments into the agro-pastoral sector and important changes of the animal production system, from nomad dominated production systems (meat production) to transhumance and sedentarization (milk and meat production).[16] Despite efforts to protect its biodiversity, including through the designation and creation of protected areas, Mauritania currently protects less than 2% of its territory[17].

1.1.5 Legal and Policy Context

15. The third **Poverty Reduction Strategy Paper** (PRSP) action plan (2011-2015) places poverty reduction as the ultimate objective of the country's economic, social and institutional development policies[18]. The action plan's implementation was successful as the country strengthened its political, economic, environmental and democratic governance, through decentralization processes in terms of territorial and local governance.

16. As a successor to the PRSP, the national Accelerated Growth and Prosperity Sharing Strategy (**"Stratégie de Croissance Accélérée et de Partage de Prospérité**") was adopted for the 2016-2030 period. That strategy sets forth a number of priorities, amongst which are (i) integrated management of natural resources and biodiversity, combating desertification, conservation and management of zones of ecological interest and protected areas; (ii) management of environmental impacts, pollution, climate and environmental emergencies, and (iii) the development of partnerships, inter-sectorial coordination, mobilization of financial resources and communication.

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[12] https://www.cbd.int/doc/world/mr/mr-nbsap-v2-fr.pdf

[13] Cooperating to make the best use of plant genetic resources in West and Central Africa: A regional imperative, Michael Halewood, Joseph Jojo Baidu-Forson, Evelyn Clancy and Raymond Sognon Vodouhe C. 2014

[14] Stratégie et plan d'action de la biodiversité 2011-2020

[15] An approach to the optimal allocation of conservation funds to minimize loss of genetic diversity between livestock breeds, H SimianerS., B Marti, J Gibson, O Hanotte, J.E.O Rege. 2003

[16] Stratégie et plan d'action de la biodiversité 2011-2020

[17] Rapport - État actuel des ressources génétiques forestières en Mauritanie. 2012. FAO. It should be noted that the sheer size of the Mauritanian territory, a large part of which is desert, artificially reduces the ratio.

[18] Report on Implementation of the Third PRSP Action Plan. 2013. http://www.imf.org/external/pubs/ft/scr/2013/cr13189.pdf

17. The country also launched in 2011 the **Environmental and Sustainable Development Policy Declaration**[19]**,** which recognizes that the development of the country starts with environmental conservation. The Declaration was a high-level reaffirmation of the National Sustainable Development Strategy (**Stratégie Nationale de développement durable (SNDD**)), which was adopted in 2006. The SNDD aims for integrated management and efficient use of natural resources, through local participatory management of natural resources, protected areas and wetlands, while encouraging linkages between development and local environmental protection. In 2017, a new strategy was adopted called National Environment and Sustainable Development Strategy (NESDS, or Stratégie Nationale de l'Environnement et du Développement Durable, SNEDD) along with the National Action Plan for Environment and Sustainable Development (Plan d'Action National pour l'Environnement et le Développement Durable (PANEDD)).

18. The SNEDD's objectives are to (i) value natural resources in a sustainable and climate change resilient way to the benefit of the poor, and (ii) promote the ecological and rational use of natural resources and ecosystem services. Expected results include: (i) an integrated policy of conservation, management and sustainable use of marine, terrestrial and aerial ecosystems is implemented, (ii) concrete measures to protect the littoral and adaptation of coastal cities are implemented to respond to priorities identified in the context of the framework for climate adaptation, and (iii) natural and cultural resource are preserved and valued. The PANEDD contains 5 strategic directions including: (i) integrated environmental governance; (ii) integrated sustainable management of natural resources and biodiversity; (iii) sustainable management of marine and coastal environment; and (iv) strengthening of prevention and management of pollution and threatened species.

19. Activities proposed under this project are also governed by the National Agricultural Development Plan **(Plan National de Développement Agricole (PNDA)),** which is a 10 year plan adopted in 2016 to develop the agriculture sector. Its global objective is to promote a modern, competitive and sustainable agricultural sector through the development of value chains with high growth potential. It is to be operationalized through four programmes: (i) intensification and diversification of agricultural production; (ii) promotion of competitive value chains; (iii) sustainable management of natural resources; and (iv) improvement of quality of extension services.

20. The **Pastoral Code** (Code Pastoral), which was adopted in 2000, articulates the principles of sustainable pasture management, including land tenure, water access, pastoral organizations, and the role of local authorities in the livestock sector. The main objective of the Pastoral code is to establish the principles for a rational management of the pastoral landscapes and to determine the rules governing all pastoral activities. Among other issues, the pastoral code establishes modalities by which to reconcile sedentary agricultural activities with the requirement of transhumant pastoralism, including right of passage and access, establishing a priority right for livestock and ensuring that any land use plans are subsidiary to this right (e.g. article 12).

21. In 2010, Mauritania joined 21 African countries to create the Great Green Wall (GGW) initiative, a pan-African proposal to green the continent from west to east to battle desertification. It aims at tackling poverty and the degradation of soils in the Sahel-Saharan region, focusing on a 15 km wide and 7,100 km long strip of land stretching from Dakar to Djibouti. Mauritania's **Strategy for the Great Green Wall** has six strategic pillars: (i) improvement of food security through sustainable management of natural resources; (ii) good governance and local development; (iii) development of income generating activities such as supply chains; (iv) knowledge management; (v) capacity building of stakeholders; (vi) coordination, monitoring and evaluation.

22. Other relevant laws include: (i) Environment Law - Code de l'environnment (2000) ; (ii) Hunting and Nature protection Law - Code de la Chasse et de la Protection de la Nature (1997) ; (iii) Law related to plant protection - Loi relative à la protection des végétaux (2000) ; (iv) Agrarian and Tenure Law - La loi foncière et domaniale (1983) ; (v) Water Law - Code de l'eau (2005).

[19] République Islamique de Mauritanie. 2011. Déclaration de politique d'environnement et de développement durable. http://aires-marines.uqar.ca/27/1/DPEDDRIM.pdf

1.1.6 Institutional Context

23. The **Environment and Sustainable Development Ministry** (Ministère de l'environnement et du développement durable - MEDD) has responsibility for environmental management. The Ministry is represented regionally by regional delegations (DREDDs). It is made up of several departments:

- Nature Protection Directorate (Direction de la Protection de la Nature - DPN);
- Protected and Coastal Areas Directorate (Direction des Aires Protégées et du Littoral - DAPL) ;
- Environmental Control Directorate (Direction du Contrôle Environnemental - DCE) ;
- Data, Intersectorial Coordination, and Programming Directorate (Direction de la Programmation, de la Coordination Intersectorielle et des Données - DPCID) ; and
- Pollution and Environmental Urgency Directorate (Direction des pollutions et des urgences environnementales - DPUE).

24. In addition to its five directorates, the MEDD also houses the National Agency for the Great Green Wall (Agence Nationale pour la Grande Muraille Verte (ANGMV), created in 2013. Its mission is to ensure the implementation of the Great Green Wall programme at the national level; to seek financing required for implementation; to support local communities and authorities in implementing the programme; to coordinate with other states, partners and donors supporting the initiative; and to contribute to the economic and social development of concerned zones.

25. Other Ministries and agencies who intervene on environmental matters include:

Ministry/ Agency	Mandate	Role in project
Ministry of Agriculture (MDA)	The Ministry of Agriculture is in charge of agricultural development. According to the dispositions of Decree 136-2016, its mandate is to: • Elaborate and implement policies relating to the development of agriculture. • Propose legislative texts and defining agricultural regulations and ensure their implementation. • Guide and facilitate the development actions carried out by the various public and private operators • Contribute to technical support for producers • Promote the structuring of the rural world • Develop and enforce regulations aimed in particular at protecting agricultural resources. • Coordinate, monitor and evaluate the implementation of development and planning policies and actions and the achievement of agricultural development objectives; • Provide the necessary agricultural support and technical advice for the sustainable improvement of agricultural production and productivity. • Define the conditions for improving the functioning and organisation of socio-professional organisations and implement the appropriate actions. • Participate with relevant Departments and national bodies in the formulation of policies and strategies that directly or indirectly affect the agricultural sector. • Maintain cooperative relations with international and inter-State bodies whose field of interest concerns the agricultural sector.	As a member of the Steering Committee, the MDA will be able to contribute agricultural data, advice for producer groups, assistance in the organization of smallholder groups, guidance towards the deployment of farmer field schools, and support to the development of value chains. Its regional antennas which will contribute to the implementation in addition to its national center of agronomic research.
Ministry of Livestock (MDE)	The Ministry of Livestock is in charge of support to livestock producers, promotion of pastoralism and support for animal health. It is governed by Decre 65.153 from 1965. It also upholds the Pastoral Code and oversees all activities related to livestock raising, management, pasture development, sales, slaughtering, and sales, including meat inspection and sanitary conditions.	The MDE will also be a member of the Steering committee. Among other contributions the MDE will contribute advice on the links between the pastoral code and the land use planning processes foreseen by the project.

Ministry of Water Resources and Sanitation	Its principal role is to ensure potable water supply to the landscapes covered by the project. It oversees all investments related to mobilization of potable water, irrigation water and sanitation.	Its participation in the project, including the Project Steering Committee, will largely be covered by its regional antennas. The MoWS will contribute technical advice and logistical support for water related activities.
Ministry of Interior and Decentralization	By the Decree 178-2008, the mandate of this ministry is to steer decentralization processes, local and sustainable development. Its two directorates are the Direction Générale de l'Administration du Territoire (DGAT) and (Direction Générale des Collectivités Territoriales (DGCT)). It oversees elections and civil registries.	The Ministry will participate in the steering committee and will contribute to the project implementation through its regional antennas, including in land use planning processes.
Ministry of Habitat, Urbanism and Land Use Planning	The Ministry of Habitat, Urbanism and Land use Planning is responsible for all land use planning processes, including urban land use planning and construction norms and standards. It has local coordination offices in each region.	This ministry will be on the Project Steering Committee and will play a key role in supporting the project's components which are related to land use planning and land tenure.
Tadamoun	Tadamoun was created in 2013 as a National agency to fight against the legacy of slavery, most notably poverty. It is very active in the "Triangle de l'Espoir", an area where descendants of slaves, called the Haratins, reside. Tadamoun's activities include programmes that increase access to education, water, health, and housing, as well as support to agriculture and other income generating activities.	Tadamoun will cooperate with the project through the local committees and co-financing, including by providing advice on consultations with Haratins and local communities, as regards the development of income generating opportunities.

1.2 PROJECT SITE CONTEXT

26. In order to select the project sites, a short list was created using environmental criteria (climate vulnerability, drought, annual rainfall, state of natural resources including underground and over ground water, biodiversity, soil and land), land use patterns (fire, deforestation for firewood, ,socio-economic criteria (poverty, malnutrition, subsistence means, population density), partnership potential criteria (national programme existence, donor's level of investment, and local populations' will) and other criteria (accessibility, urgency, population's vulnerability).

27. Following this initial selection, a shortlist was presented at the inception workshop. Consensus developed around the three following sites: (1) El Atf, (2) Triangle de l'Espoir (3) Great Green Wall. The landscapes were subsequently approved by the MEDD, following the first field mission of the FAO and consultants.

1.2.1 El Atf

28. El Atf is an area of 5,000 km2 in the Gorgol Wilaya, bordered by the Senegal River in the South, the Gorgol in the North, and the Oued El Garfa South-West of El Atf. The Gorgol and Oued el Garfa are both effluents of the Senegal River.

29. Annual rainfall is very irregular in time and space, and oscillates between 150 and 500 mm. The temperature reaches 40 degrees Celsius in summer and can fall to 15-23 degrees Celsius in winter. The project will focus on a sub-area that covers up 152,355 hectares. This area was selected because of the high anthropic pressure pasture and water for animals and local populations.

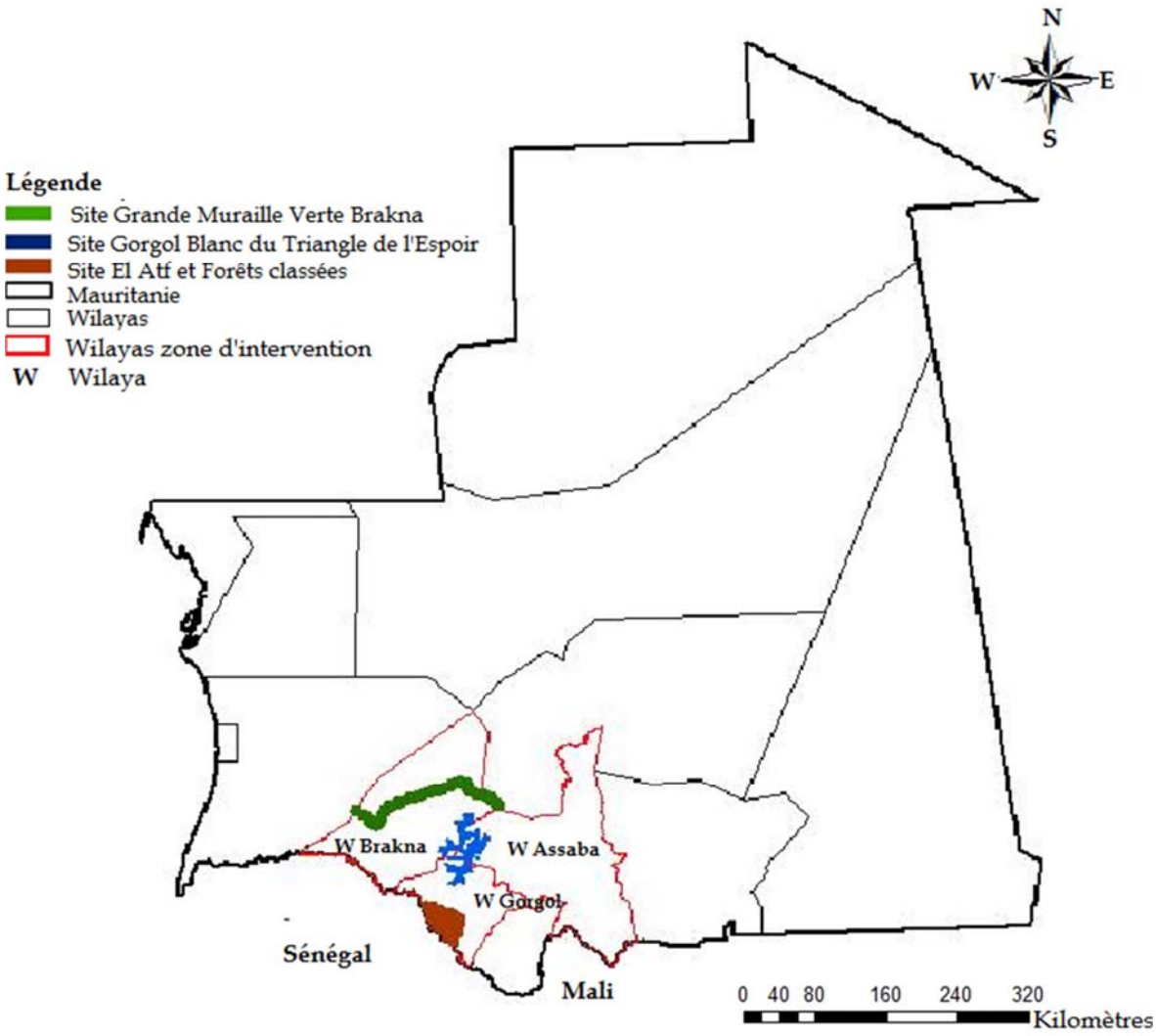
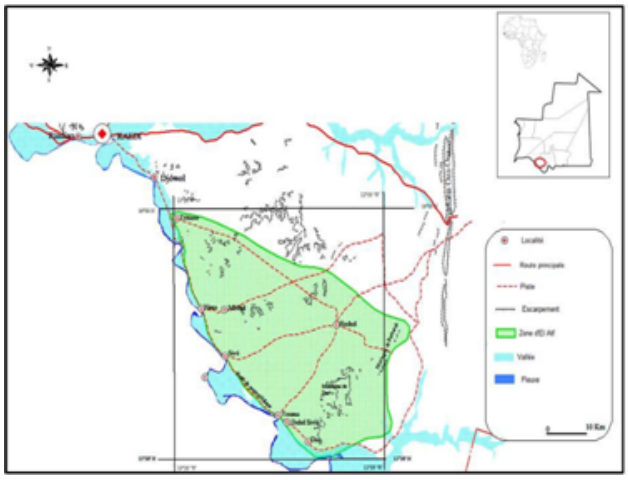


Figure 1: The three project landscapes

30. El Atf is hilly and has a varied vegetation cover but can be characterized as a mix of steppe and savannah. It also contains 4 "forêts classées" or semi protected forests along the Senegal River. Drought has been recurrent since the 1970s.

31. El Atf's animal species diversity is unique in Mauritania, due to its tree cover and abundant pastures, but is threatened by poaching, fuelwood collection, and pastoralism. Generally El Atf's natural resources are threatened by overgrazing, and the multiplication of water points, which has made the zone attractive for livestock herders all year round. When rainfall is low, more animals come to El Atf from other zones, further exacerbating pressure on natural resources, especially pasture, shrubs and trees.

32. The fixed population of El Atf is 14,000 people, with an annual growth rate of 2.58%. The livestock population is 93,000 cattle and 131,000 small ruminants. However, in times of animal migration towards water points and pastures, this number can double or triple. The number of animals in El Atf has kept growing in recent years as droughts and land degradation, including desertification, has led more people to migrate.



33. There is also a growing risk of conflict between sedentary populations and nomadic populations. As such, the project will work towards protecting the El Atf zone as a UNESCO Biosphere Reserve, which puts emphasis on reconciling conservation and sustainable use of biodiversity, with recognition that the area must maintain a development function. There are four semi-protected forest areas around El Atf which act as buffer zones for animals, and also are a source of wood for local populations. The project will support strengthening management of two semi-protected forests, the Ngouye and Yama Ndiaye forests together making up 2,355 hectares, and the creation of a biosphere reserve making up 150,000 hectares.

1.2.2 Triangle de l'Espoir or "Triangle of Hope"

34. The Triangle de l'Espoir area is 309,502 hectares and its population is 7,000 people. Most of the population in the area is of Haratin descent, a group affected by past slavery whose members have tended to remain disempowered and live in higher poverty than other segments of the population. The area is also under-served by infrastructure and basic services, leading to poor quality of life for households. The Triangle de l'Espoir is chronically affected by drought and other climatic events, exacerbating food insecurity and malnutrition. These climatic events are growing more frequent due to climate change.

35. Dominant vegetation is savannah with sparse tree cover, including *balanites aegyptiaca* (desert date), *acacia eherbergiana* (salam), *acacia tortilis* (umbrella thorn) et *calotropis procera* (Sodom apple). Many trees are used for crafts, pharmaceutical and food products. A lot of these species have been over exploited and some tree species have disappeared from the area.

36. Most of the population is concentrated along the Gorgol Blanc and Gorgol Noir rivers that cross this ecosystem, as well as around lakes and ponds, all of which are heavily silted. The following lakes and ponds are in the region: Mal lake, the Djeloar and Lebhert and Djounaba ponds.

37. Agriculture is practiced mainly around oueds and behind dams and there is also some rainfed agriculture. Crops cultivated include sorghum, millet, maize, and wheat. However, access to both underground and over-ground water is challenging despite several rivers running through the area, including the Gorgol Blanc, the Gorgol Noir and Garfa. This has posed a limit to exploiting available arable land. Land degradation is aggravated by hydraulic erosion and wind erosion.

38. All communities in the area practice livestock husbandry. There is a lot of livestock in this zone, including a lot of transhumant herds. The droughts of recent decades as well as the high pressure of animals have reduced vegetative cover of the land. Despite this, and despite low availability of fodder, herds keep growing. There is a need for participatory land use planning in order to delineate grazing areas to allow pastures to recover.

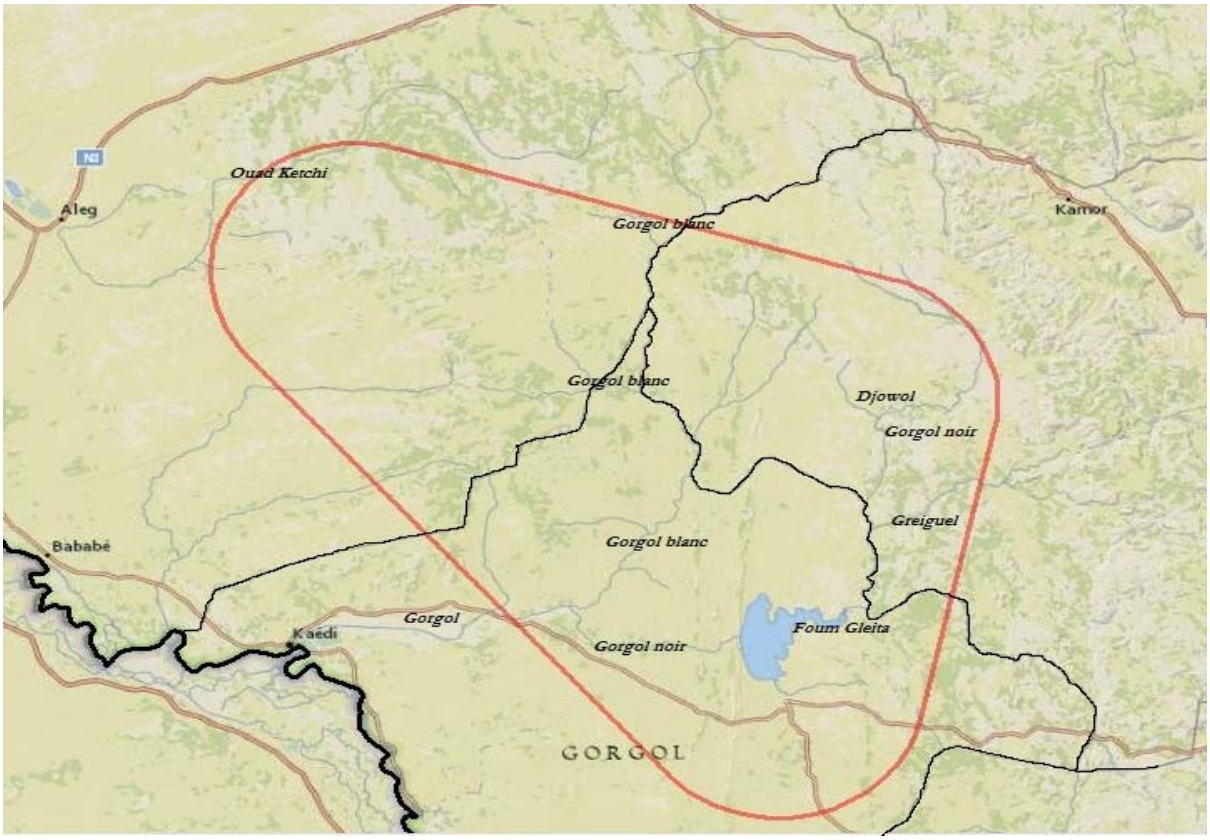


Figure 2: Triangle de l'Espoir

1.2.3 Great Green Wall

39. The project will also support Mauritania's Great Green Wall initiative in the province of Brakna and covers an area of 384,266 hectares. The population in the zone is 51,244. The people rely on the Senegal river to the South for their water supply, as well as 200 – 300 mm of rainfall a year. Some lakes, ponds and temporary oueds play an important economic role for local populations. They include the Aleg and Mal lakes, the Gadel and Cheggar ponds and the Ketchi Oued.

40. These zones comprise various timber and non-timber resources exploited by the local populations: medicinal plants (*Combretum glutinosum, Ziziphus mauritana*), fruits and seed-pods (*Acacia nilotica, Acacia albida, Acacia raddiana, Balanites aegyptieca, Ziziphus mauritana*) and gum (*Acacia senegal, Acacia seyal, Commihora africaca*).

41. Most of the population depends on rainfed agriculture, with low yields. With the recent decrease in rainfall, rainfed agriculture has practically been abandoned and now concentrated around lakes of Aleg and Mal and some large ponds, dams and dikes. The crops cultivated include sorghum, maize and leguminous crops, in addition to vegetables (eggplant, cabbage, gombo, peppers, sweet potatoes, carrots, tomatoes, beets) and fruits (dates, citrus, mangoes, guavas, and bananas). Livestock, including sheep, goat and cattle, is also important to the local economy and plays a key role in the population's food security.

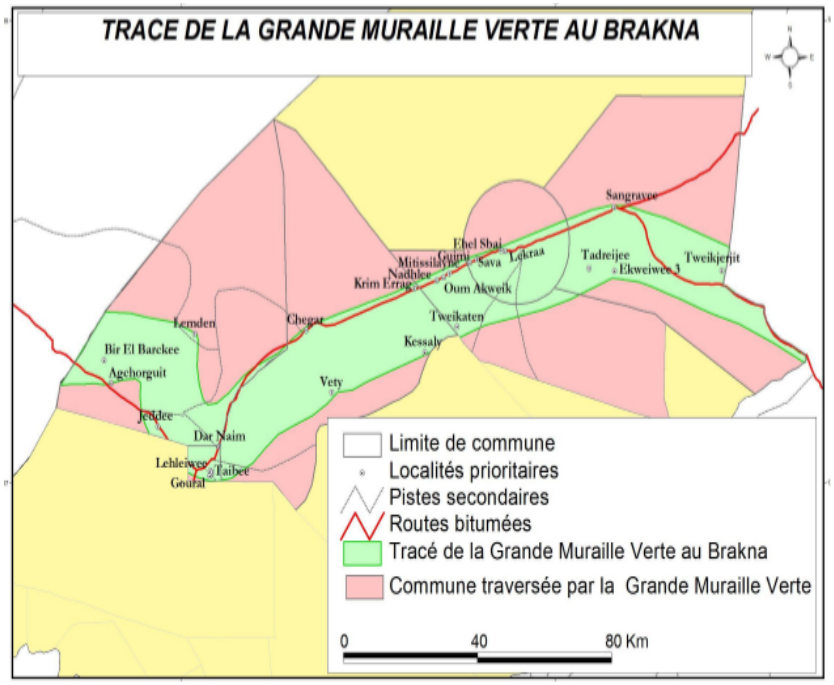


Figure 3: Great Green Wall area

Landscapes	Ecosystems	Wilayas	Moughataa	Communes	Population	Area (ha)
Triangle of Hope	Forest Rainfed Pastoral	Gorgol	Monguel	Boukol	7,000	309,502
				Melzem Teichout		
		Assaba	Barkéol	Ghabra		
				Boulahrath		
				R'Dheidihie		
El Atf	Pastoral Forest	Gorgol	Kaédi	Djéol	14,000	152,355
				Tokomadji		
				Toufoundé Civet		
				Lexeib I		
			Maghama	Dollol Civé		
				Dao		
				Maghama		
Great Green Wall	Wetlands Rainfed Forest Pastoral	Brakna	Aleg	Aleg	51,244	384,266
				Aghchorguitt		
				Choggar		
			Magta Lahjar	Magta-Lahjar		
				Sangrava		
				Ouad Amour		
Total					65,944	846,123

SECTION 2 – PROJECT RATIONALE

2.1 THE CURRENT SITUATION

2.1.1 Main environmental threats

42. Mauritania's natural resources and ecosystem services are under significant pressure caused by population growth, repeated droughts, climate change and especially human activities which are not adapted to the fragile nature of the ecosystems, the natural regeneration rate of the resources and the natural climatic variations[20]. Ecosystems suffer from fragmentation, particularly in areas of high human density due to roads and infrastructure, agriculture, and expansion of human settlements. Pressure on pastoral and forest resources is especially high during times of drought and rainfall deficit. Overexploitation of natural resources disrupts ecosystems' equilibrium, reduces diversity, and ecosystem services available to local populations which affect access to food, water and energy.

43. The inter-related and mutually reinforcing environmental threats in the programme's three landscapes are described below. There is currently a lack of quantitative data on the below environmental trends in the project areas, which the project aims to address through its Activity 1.1.

44. **Water resources** are threatened by recurring and long-lasting droughts, due to changing rainfall patterns and increased evaporation due to rising temperatures. Combined with unsustainable water use and overexploitation of limited water resources, these results in declining levels of surface water and groundwater leading to water scarcity. In fact, wells in the project area have become increasingly dry, increasing time spent fetching water for the local population. In addition, soil erosion and desertification lead to silting of water ways such as oueds and rivers. Some pollution negatively impact waterways, from lack of waste management systems in the project area. The threats to water resources are exacerbated by the lack of monitoring and information concerning their quantity and quality as well as the weak capacity for maintenance of water infrastructure both by local populations and regional authorities.

45. **Loss of arable land** occurs in the programme's landscapes due to anthropological and animal pressure (unsustainable agriculture, deforestation and overgrazing). The loss of arable land results in sedimentation, desertification, erosion, and is further aggravated by natural movements such as dune progression. Droughts have been frequent in recent decades, and combined with growing animal pressure during years with little rainfall, this has degraded the vegetation cover of the three landscapes. In addition, the disappearance of the vegetation cover accelerates wind and water erosion, especially in hilly areas. This threatens the livelihood of the populations as it reduces their agricultural and livestock production, and/or leads to migration out of project areas.

46. **Forests** have been heavily deforested and degraded in the project's three landscapes by increasing charcoal collection, bush fires, and deforestation for conversion to agricultural and livestock land use. Other causes of deforestation and forest degradation include termites, use of wood for construction and tools, and unsustainable exploitation of non-timber forest products (NTFP). The deforestation and degradation were exacerbated by chronic drought and termites. When herders lack fodder, they use trees to feed their animals. Forests tend to be most degraded around water bodies, where there are higher concentrations of both humans and animals. Deforestation and forest degradation depletes the natural capital that local populations depend on, such as NTFPs. Deforestation and forest degradation also exacerbate erosion and land degradation. Deforestation and forest degradation can also impede water retention in soils.

47. **Biodiversity** is threatened by poaching, degradation of the natural resources upon which species depend, including declining water resources and deforestation. In fact El Atf is host to 3 plant species that have been identified as threatened in Mauritania's NBSAP 2011: Adansonia digitata, Anogeissus leiocarpus, Sclerocarya birrea. In addition, El Atf is also host to species of medicinal value such as acacia nilotica. In addition, according to local populations, several animal species are under threatened with extinction such as gazelle dorcas, guinea fowl (numida meleagris), turtles (geochelone sulcata) and

[20] SNEDD and PANEDD, 2017

porcupine (hystrix cristata). In terms of agro-biodiversity, Mauritania houses centres of diversity for species such as millet, cowpea, fonio, yam, African rice, Bambara groundnut and oil palm and several crops have developed genetic complexes and wild relatives found in Mauritania[21]. However, agro-biodiversity in Mauritania is depleting, with landraces threatened by poor agricultural practices, soil degradation and salinization, inappropriate water management, and inadequate pesticide and fertilizer use.[22]

48. **Climate change** is expected to exacerbate the above by causing further changes in rainfall, and increasing the severity and length of dry periods, thus threatening already scarce water resources. According to scenarios developed for the third National Communication, Mauritania is likely to experience severe temperature increases by 2050 (more than 2 ° C in the northeast). By 2100, increased could reach up to 4.5 ° C in the southern Wilayas of Assaba and Guidimakha, and a warming of more than 3.5C in the east. While a clear downward trend of rainfall is expected in the country in general there is a predicted increase in rainfall in the area in the extreme northeast of the country (Ech-Chaguat Lemgheity) where the annual average is currently less than 20mm. This is likely to have significant impacts across the entire ecosystem, first visible in the drying up of ponds and decreased aquifer recharge rates, as well as an overall decrease in biomass. It is also predicted to lead to diminished fodder availability, decreased crop yields, rarefication of forests, with corollary impacts on food security, livestock survival, biodiversity.

49. Because the local population is so dependent on natural resources – and on a fragile ecological balance – all of the above threatens the local populations' livelihoods. In fact, the environmental threats described above have led to growing food insecurity, loss of income, increase in conflicts linked to access to natural resources and an increasing trend of exodus towards urban centres, particularly of young men.

2.1.2 Baseline initiatives

50. In the baseline scenario, there are a few interventions in Mauritania that are targeting selective dimensions of the complex dynamic that links communities and their environment. Most programming focuses on increasing food production and human security, without restoring key ecological services.

51. For example, interventions in the agriculture sector provide technical assistance to production, or investments into water mobilization, without promoting watershed management, reforestation or water use efficiency, which does not address the full breadth of the problems facing water scarce regions. A significant portion of baseline investments and technical support programs focus on improving the productivity of livestock and livestock-based activities, without providing avenues for the restoration of ecosystem services depleted by over-stocking or overgrazing.

52. In fact, a lack of integrated land use planning leads to counter-productive investments being made in biologically fragile areas. In some project sites, it was possible to observe that tree-cutting permits were being granted without consideration for the rarity of the resource and its role in the broader ecosystem. In other cases, the multiplication of water access points is undertaken without due regard to the ecological carrying capacity.

53. Beyond the National Communications exercises, there is no accounting of emissions from land use change and loss of forest cover, because such processes have little relevance to local planners. Ecosystem services, from biological resources to carbon storage, are not fully understood or valued, and data is scarce. Therefore, trade-offs are being made without proper information, and such trade-offs tend to favour short-term gains versus long-term progress. This, in turn, perpetuates the cycle in which most communities remain, which is to simply survive each crisis.

54. A number of baseline projects, designed to address the fundamental socio-economic development problems, are taking place in Mauritania, as described below. These projects are mainly addressing

[21] Cooperating to make the best use of plant genetic resources in West and Central Africa: A regional imperative, Michael Halewood, Joseph Jojo Baidu-Forson, Evelyn Clancy and Raymond Sognon Vodouhe C. 2014

[22] Stratégie et plan d'action de la biodiversité 2011-2020

livelihood improvement, agricultural productivity and food security. Some projects seek to address targeted aspects of the institutional framework related to natural resources management by providing capacity support to government and civil society institutions. This proposed initiative builds on the baseline created by these programs to generate additional global environmental benefits.

Name of project	**Financing, dates and Implementing partners**	**Objectives**
Regional Sahel Pastoralism Support Project *Projet Régional Appui au Pastoralisme au Sahel* (PRAPS)	USD 45 000 000 from World Bank through the Ministry of Agriculture (2013-2021)	The project aims at improving access to essential resources and production services and markets for pastoralists and agro-pastoralists in border areas and along transhumance routes. It also aims at improving the government's ability to respond in a timely and effective manner to pastoral crises or emergencies. Implementation areas : Trarza, Brakna, Gorgol, Guidimagha, Hodh Chargui, Hodh Charbi, Assaba, Tagant, Adrar, Inchiri
Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel *Programme de renforcement de la résilience à l'insécurité alimentaire et nutritionnelle récurrente au Sahel* (P2RS)	USD 14 000 000 from the African Development Bank through the Ministry of Agriculture (2015-2019)	The goal of the program is to contribute to reducing poverty and improving food and nutrition security in the Sahel region. The project aims at achieving this objective by sustainably improving the productivity and agro-sylvo-pastoral and fish production in the Sahel. Its two components include the development of regionally significant food value chains and markets including by providing investment into production, processing and trading capacity. In addition to traditional livestock value chains, it also provides support to seed production and aquaculture. It includes some activities related to natural resources management, including setting up of tree nurseries and creation of protected areas, as well as testing of improved cook stoves technologies. This project provides a baseline of agro-pastoral capacity and technical options, as well as the development of markets which can be used for the new value chains proposed in this GEF initiative. Implementation areas: Hodh Chargui, Hodh El Gharbi, Gorgol, Guidimagha, Assaba, Tagant, Adrar, Trarza and Brakna
Brakna West Irrigation Scheme Projet – Phase 2 *Aménagement Hydroagricole Brakna Ouest* (PAHABO II or also known as PATA – *Programme d'Appui à la Transformation Agricole*)	USD 23 000 000 from the Arab Fund, the ADF (AfDB) and the Nigeria Trust Fund (NTF) through the Ministry of Agriculture (Phase II started in 2016)	The project's objective is to contribute to improved food security and to increase sustainable irrigated agricultural production in order to increase farmers' incomes. The project channels investment towards the construction of water mobilization infrastructure, including water for irrigation and water for livestock. Implementation areas: West Brakna The project tests and demonstrate various technical options for water conservation and management in the local context, which will be transferred to this proposed GEF initiative. The PAHABO project will also build capacity among the water stakeholders for identifying needs and management options, upon which the PDGIEDHD can build in its other intervention areas.
Integrated Water Resources Management *Projet de Gestion Intégré des Ressources Eau* (PGIRE II)	USD 42 820 000 From World Bank and Ministry of Agriculture (2014-2021)	This regional project aims to improve management of water resources for sustainable development in the Senegal river valley. It is coordinated by the Senegal River Basin Authority (OMVS), and includes infrastructure works along the Senegal river, along with the development of a transboundary management system. This project provides a baseline capacity for Mauritanian institutions involved in water management, on which this project will build. Implementation areas: Trarza, Brakna and Gorgol Wilayas
Integrated Rural Development Programme	USD 80 000 000 from Islamic Development Bank, African Development Bank,	The project aims to support the development of priority value chains and of the Agricultural Council. It also aims to i) protect vegetation cover, ii) develop and manage the hydro-agricultural infrastructure in wetlands, iii) develop the

Programme de Développement Rural Intégré (PDRI)	African Development Fund and Mauritania (2014-2019)	infrastructure in rural areas, and iv) strengthen the resilience to food and nutrition insecurity. Implementation area: the whole of Mauritania
National Integrated Rural Water Sector Project *Programme National Intégré des Services d'Eau Rurale* (PNISER)	USD 12 890 000 AFDB through the Ministère de l'Hydraulique et Assainissement (2013-2019)	The project seeks to improve access to water and sanitation of rural populations of Gorgol and Assaba. It supports awareness raising and technical capacity on water conservation and sanitation, as well as the development of drinking water and livestock water mobilization and conservation infrastructures. The project will build water ponds for livestocks as well as boreholes and sanitation works. It will provide institutional support for the development of the national strategy for water mobilization and management and capacity building for the National Rura Water Office (ONSER), on which this project will build when considering the realization of water improvement works. Implementation areas: Brakna, Gorgol and Tagant
Institutional strengthening in Mauritania towards agricultural and pastoral resilience *Renforcement Institutionnel en Mauritanie vers la Résilience Agricole et Pastorale* (RIMRAP)	EUR 25 690 000 EU funded (2016-2020) with Ministère de l'Élevage	The general objective is to improve the resilience of vulnerable populations to nutritional and food insecurity by improving governance and equitable access of resources in the context of climate change. This project focuses on strengthening the governance in terms of equitable access to natural resources. It provides support to he Departments of Agriculture and Farming, supports the development of policies and strategies particularly in terms of monitoring and evaluation, training and research for agro-pastoral development. The capacity created among public and civil society institutions will be instrumental to this project when it comes to addressing land use planning and landscape based management approaches. Implementation areas: Assaba, Guidimagha, Hodh Chargi and Hodh El Gharbi
Inclusive Value Chain Development Project *Projet de Développement des Filières Inclusives* (PRODEFI)	USD 45 700 000 with half funded by IFAD, with Ministère de l'Agriculture (2016-2024)	PRODEFI's objective is to improve incomes and food security of local populations through the inclusion of vulnerable populations in income generating and resilient value chains. The PRODEFIS supports production and processing to respond to market demand. The first phase of the project focuses on horticulture, poultry farming, goat milk and non-timber forest products and testing of inland fishing around Lake Foum Gleita. It also explores new potential value chains based on market analysis, on which this project will be able to build. Prodefis also integrates aspects related to resilience to climate change and proposes climate adapted value chain development support. Implementation areas: Hodh Chargui, Hodh El Gharbi, Assaba, Guidimagha
Global Alliance against Climate Change in Mauritania Programme *Programme Alliance Mondiale contre le Changement Climatique en Mauritanie*	USD 4 170 000 funded by EU and implemented by MEDD (2015-2019)	This programme's objective is to increase the resilience of vulnerable populations with a view to strengthen their food security. The project supports the development of climate-related services, such as forecasting, meteorology and climatology. It also undertakes action-research studies to identify and document community-based practices for coping with climate variability and climate change in the context of household production systems. Implementation areas: Assaba and Brakna The knowledge generated by this project will be integrated into the proposed GEF intervention as a baseline. More specifically, climate information services will be disseminated to the local authorities to inform land use planning, as well as the choice of value chains and future economic opportunities on the basis of updated climate

		projections. The PGIEDHD will also benefit from the GACC supported capacity building at central level, which will enable stronger mainstreaming of climate change in development planning at all levels.
Takafoul	USD 29 000 000 Via Tadamoun and supported by the World Bank	This project puts social safety nets in place and provides monetary transfers to the targeted poor households. Takafoul is a traditional system of mutual guarantee or community-based safety net. The Tadamoun agency promotes social development and local education initiatives for isolated or disenfranchised communities. This project will build on ongoing initiatives to integrate environmental concerns into the local governance and safety net mechanisms.

2.1.3 Remaining barriers to address the environmental threats

Lack of an integrated and ecosystem-based approach to supporting sustainable human development

55. Most of the projects and initiatives developed so far in the Southern part of Mauritania have been developed selectively around the issues of livelihood improvement, natural resources management, agricultural productivity or food security. While targeted interventions, that are guided and are anchored within the national development and sector strategies and plans, help address the urgent survival needs of communities, the lack of an integrated approach means that one aspect of the ecological, cultural or economic landscape, always goes ignored. Such interventions have a very low rate of sustainability, as has been seen from previous interventions in one sector or another. Furthermore, the size of the Mauritanian territory (e.g. ecosystems and Wilayas) also often leads to small interventions being dispersed throughout, leading to a dilution of impact.

56. In order to truly curb poverty as well as environmental degradation in rural areas, and in recognition that livelihoods depend on ecosystem health, in particular on the ability of the ecosystem to provide and conserve water, interventions should be oriented along an integrated and ecosystem-based approach that also takes into consideration the socio-cultural aspects of the agro-pastoral lifestyle. Focusing on well circumscribed landscapes would allow for such an integrated approach, through a combination of investment, technical assistance and land use planning to ensure lasting capacity is built at all levels. Using an integrated ecosystem-based approach would allow for a full consideration of root causes that are affecting human and environmental sustainable development in the targeted area, removing obstacles and disincentives for the sustainable use of natural resources.

Lack of means to provide technical expertise in the monitoring, planning and management of ecosystems

57. As was emphasized during the project preparation phase, rural communities targeted by the project have a low mastery for agricultural production and natural resource management. There is a generally low level of professionalization within the agro-ecological value chain, meaning very low productivity and income are derived from the exploitation of fragile natural resources. This leads to expansion (for example larger herd sizes to compensate for losses, or larger but less productive clearings for agriculture), which in turn causes further degradation and depletion of land, water and biological resources. In addition, there is a lack of technical expertise within various production systems, with communities using out-dated or maladapted production techniques, and with little support being provided by the over-stretched local authorities.

58. In general, there is a low understanding of how ecosystems function and the services that they provide in the areas concerned by the project, owing to a lack of systematized data, observation protocols, and resources for planning and management. For example, a fundamental and underlying barrier to effective agro-biodiversity conservation in Mauritania is the inadequate appreciation of the full socio-economic and cultural value of traditional varieties. Benefits derived from agro-biodiversity include superior nutritional value, cultural significance, and higher resilience against shocks like pests, invasive

alien species, extreme weather events, and soil depletion. However, lack of information and awareness of these benefits among policy-makers, producers and consumers leads to an incorrect valuation of traditional varieties and agro-biodiversity.

59. Investments in technical capacity among governments, NGOs, and local communities, aligned towards shared goals of conservation and productivity, should be made within a long-term perspective. Targeted trainings and ad hoc approaches that have been used in the past have proven only moderately successful, and it is likely that some reflection will be needed on the institutional framework that is most conducive to lasting capacity development and economic growth in the area.

The livelihood base is too weak to support lasting investment in regenerating natural ecosystems

60. An in-depth survey of targeted project areas reveals that extreme poverty and deprivation among local communities prevents the rational exploitation of natural resources. Unsustainable natural resource uses, such as deforestation for fuel-wood or agricultural expansion and overgrazing are increasing. Meanwhile, the weak income derived from ecological services means that there is no incentive to maintain the natural environment. Populations go from responding to one crisis after another, and resistance to climate shocks, such as droughts or prolonged dry seasons, is very weak. Alternatives to ecosystem-based livelihoods are rare, while pressures on remaining land, water and biological resources continue to erode the ecosystem services. A long-term programmatic approach would ensure that incremental gains in livelihoods and income are not lost after the closing of the project, since each subsequent phase would build on a gradual increase in local capacity.

61. Therefore, to address the above-mentioned barriers, the FAO and the Ministry of the Environment and Sustainable Development (MEDD) of Mauritania have decided to develop a sustainable human development program based on an integrated ecosystem management approach. The program's main objective will be to increase the sustainable development of communities by reducing natural resources degradation through ecosystem rehabilitation, all the while creating and diversifying the sources of income for local communities.

2.2. THE GEF ALTERNATIVE

2.2.1 Incremental cost reasoning and global environmental benefits

62. As seen in section 2.1.2, the ongoing initiatives to address sustainable human development have all looked at the underlying problems associated with human development. The innovativeness of the proposed project resides in the fact that it will take an integrated and ecosystem-based approach to sustainable human development that also takes into consideration the socio-cultural aspects of the agro-pastoral lifestyle.

Name of project	Contribution to project's objective
Takafoul USD 3.3M co-financing	Contributing mostly to component 3 and to a lesser extent component 2, the Tadamoun financed promotes social development and local education initiatives for isolated or disenfranchised communities. The GEF project will further build upon initiatives financed by Tadamoun to integrate environmental concerns into the local governance and safety net mechanisms.
Regional Sahel Pastoralism Support Project *Projet Régional Appui au Pastoralisme au Sahel* (PRAPS) USD 2 M co-financing	Contributing to component 3 *Reduction of pressure on ecosystems through income generation and funding mechanisms*, the PRAPS helps improve access to essential resources and production services and markets for pastoralists and agro-pastoralists in border areas and along transhumance routes. It therefore supports livelihood development more upstream of some key value chains of agro-pastoral products.

	The GEF finance assures future investments in value chain development and employment creation in the agro-pastoral sectors are done considering the carrying capacity of the natural resource base.
Institutional strengthening in Mauritania towards agricultural and pastoral resilience *Renforcement Institutionnel en Mauritanie vers la Résilience Agricole et Pastorale* (RIMRAP) USD 2 M co-financing	RIMRAP aims at improving the climate change resilience of food insecure populations through improved governance and equitable access of natural resources. It works at the policy level, and supports M&E strategy development, training and research for agro-pastoral development. Therefore, the project RIMRAP provides a solid level of public and civil society institutional capacity on which the GEF project can further build under component 3 in particular, adding land use planning and landscape based management approaches.
Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel *Programme de renforcement de la résilience à l'insécurité alimentaire et nutritionnelle récurrente au Sahel* (P2RS) USD 500 000 co-financing	The goal of the program is to contribute to reducing poverty and improving food and nutrition security in the Sahel region. The project aims at achieving this objective by sustainably improving the productivity and agro-sylvo-pastoral and fish production in the Sahel. Its two components include the development of regionally significant food value chains and markets including by providing investment into production, processing and trading capacity. In addition to traditional livestock value chains, it also provides support to seed production and aquaculture. It includes some activities related to natural resources management, including setting up of tree nurseries and creation of protected areas, as well as testing of improved cook stoves technologies. This project provides a baseline of agro-pastoral capacity and technical options, as well as the development of markets which can be used for the new value chains proposed in this GEF initiative.
Integrated Water Resources Management (PGIRE II) *Projet de Gestion Intégré des Ressources Eau* (PGIRE II) USD 2 M co-financing	This regional project aims to improve management of water resources for sustainable development in the Senegal river valley. It is coordinated by the Senegal River Basin Authority (OMVS), and includes infrastructure works along the Senegal river, along with the development of a transboundary management system. This project provides a baseline capacity for Mauritanian institutions involved in water management, on which this project will build. In particular, the proposed GEF initiative will require organizations such as the OMVS to participate in, or to help inform, the land use planning exercises foreseen under Component 1. Consistency and coherence between the watershed-based planning frameworks will actively be sought on a landscape basis.
Integrated Rural Development Programme *Programme de Développement Rural Intégré* (PDRI) USD 1 M co-financing	Working towards food security throughout Mauritania, the project particularly focuses on agricultural infrastructure development and maintenance. Therefore, it provides the basis for further rural development and natural resource management provided in part by PDGIEDHD.
National Integrated Rural Water Sector Project *Programme National Intégré des Services d'Eau Rurale* (PNISER) USD 5 M co-financing	The project seeks to improve access to water and sanitation of rural populations of Gorgol and Assaba. It supports awareness raising and technical capacity on water conservation and sanitation, as well as the development of drinking water and livestock water mobilization and conservation infrastructures. The project will build water ponds for livestocks as well as boreholes and sanitation works. The PNISER project addresses a macro-level policy gap which is not targeted by the proposed GEF initiative. The PNISER project will provide institutional support for the development of the national strategy for water mobilization and management and capacity building for the National Rural Water Office (ONSER), on which this project will build when considering the realization of water improvement works. The ONSER, when it is fully capacitated, will become a stakeholder of this project who will participate in land use planning and who will benefit from technologies tested for water conservation and management.

Inclusive Value Chain Development Project *Projet de Développement des Filières Inclusives* (PRODEFI) USD 1 M co-financing	PRODEFI's objective is to improve incomes and food security of local populations through the inclusion of vulnerable populations in income generating and resilient value chains. The PRODEFIS supports production and processing to respond to market demand. The first phase of the project focuses on horticulture, poultry farming, goat milk and non-timber forest products and testing of inland fishing around Lake Foum Gleita. It also explores new potential value chains based on market analysis, on which this project will be able to build. Prodefis also integrates aspects related to resilience to climate change and proposes climate adapted value chain development support. The proposed GEF alternative will seek complementarities and joint approaches with the PRODEFIS, including using common approaches to developing value chains. IFAD and the PRODEFIS model provide capacity to local stakeholders in terms of social mobilization, producer group creation, farmer organization strengthening – including financial literacy and business planning – as well as rural finance, all of which create a baseline upon which the PGIEDHD will pursue global environment benefits.
Support Programme for Agricultural Transformation *Programme d'Appui à la Transformation Agricole* (PATA – PAHABO II) USD 500 000 co-financing	The project's objective is to contribute to improved food security and to increase sustainable irrigated agricultural production in order to increase farmers' incomes. The project channels investment towards the construction of water mobilization infrastructure, including water for irrigation and water for livestock. Implementation areas: West Brakna The project tests and demonstrate various technical options for water conservation and management in the local context, which will be transferred to this proposed GEF initiative. The PATA/PAHABO II project will also build capacity among the water stakeholders for identifying needs and management options, upon which the PDGIEDHD can build in its other intervention areas.

63. The global environmental benefits are summarized below.

Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society

64. The project will contribute to the replenishment target of "Improved management of landscapes and seascapes covering 300 million hectares" by catalysing the sustainable management of 152,355 hectares of land with biodiversity of global significance, through multiple complementary activities including: (i) establishing a Biosphere reserve in El Atf zone (150,000 ha), (ii) building capacity to prevent and manage wild fires, including through building of fire barriers, (iv) the restoration and sustainable management of a forest core zone (2,355 ha). All of these activities will contribute to preserving species threatened with extinction, especially in the El Atf landscape.

65. The project will contribute to conserving and sustainably managing endemic agro-biodiversity species of millet (Pennisetum spp.), cowpea (Vigna unguiculata), fonio (Digitaria exilis), yam (Dioscorea rotundata, D. cayenensis, D. dumetorum, D. bulbifera), African rice (O. glaberrima Steud.), and Bambara groundnut (Vigna subterranean). In addition, the project will contribute to the production, conservation and sustainable management of several introduced crops that have developed genetic complexes and wild relatives in Mauritania. Examples of potential value chains include groundnut, rubber, cocoyam, maize, cassava, sweet potato, citrus, or taro.

66. The project makes a direct contribution to the Aichi targets 7, 11 and 14. The contribution of the GEF project towards the progressive achievement of these 3 Aichi Targets will be monitored through the selected indicators of the project outcomes, in particular:

- Target 7 (By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.) This target is captured by outcome 2 indicator Number of Ha of land under renewed vegetal cover and under sustainable management.
- Target 11 (By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and

integrated into the wider landscapes and seascapes.). This target is captured in the BD tracking tools and will be reported upon in due time.

- Target 14 (By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.) This target is captured by outcome 4 indictor % increase of direct beneficiaries' incomes. This indicator shows the positive trends in benefits that humans derive from biodiversity and ecosystem services deriving from the project.

Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)

67. By enabling the sustainable land management of 160,355 hectares – the project will contribute to the replenishment target of 120 million hectares under sustainable land management. It will do so by promoting: (i) sustainable agricultural practices, (ii) afforestation, and (iii) sustainable grassland management. This will contribute to preserving agro-biodiversity via the promotion and dissemination of endemic, resilient and threatened crop species.

Support transformational shifts towards a low-emissions and resilient development path

68. The project leads to a reduction of 4.8 million tCO_{2eq} and thus contribute towards the 750 million tCO_{2eq} mitigated. It will do so by promoting (i) reforestation, (ii) ANR (iii) sustainable management of grasslands, and (iv) cropland rehabilitation. This has been calculated using FAO's EX-ACT tool. Details can be found in Annex 10. Also indirect carbon benefits have been estimated using the EX-ACT tool and are reported in Annex 10 as well.

69. It is expected that the project will indirectly lead to duplicative effects and the following multipliers.

- First, it will support the establishment of a dynamic network of Agro Pastoral Field Schools (APFS) and Farmer Field Schools (FFS) (while integrating and strengthening the existing one), the project will indirectly affect the extension system used in Mauritania. In particular, it is expected that through this support, local and national interventions in agriculture and livestock will (i) better integrate adaptation to climate change, thereby greatly contributing to overall adaptation in the agricultural and sylvo-pastoral sectors, and (ii) promote agro-biodiversity by producing and disseminating endemic and resilient crop varieties. This will lead to improved land management, reduced land degradation and conservation of unique species and varieties beyond the project.
- Second, by developing alternative supply chains and connecting producers to market buyers, the project will foster the development of new markets that will be able to expand beyond the project area and beyond the lifespan of the project.
- Thirdly, the promotion of improved cook stoves and biogas digesters will be done in such a way that local capacity to manufacture those improved technologies and maintain them will be built in order for local populations to apply this know-how to manufacture additional equipment.

2.2.2 Project objectives, outcomes and outputs

70. The development objective is to sustainably improve the livelihoods, and the natural resource base upon which rural communities depend, in Southern Mauritania.

71. The project objective is to increase sustainable human development through the restoration of ecosystem services and an integrated ecosystem management approach in three Southern Mauritania landscapes.

72. In line with the integrated approach, activities under each component are expected to contribute to the simultaneous fulfilment of objectives under Land Degradation, Sustainable Forest Management, Biodiversity Conservation, and Climate Change Mitigation Focal Areas. The project is designed to achieve 5 inter-related outcomes that will provide the necessary basis for governments and communities to better manage environmental resources while achieving their development objectives. The first outcome foresees the set-up of a sound knowledge base and planning capacity, which will provide a basis for rehabilitating degraded ecosystems (Outcome 2) and natural infrastructure (Outcome 3), combined with renewed collaborative management systems. These outcomes will be reinforced by activities under Outcome 4 and outcome 5 to reduce human-induced pressure on environmental resources and to support monitoring and evaluation. The approach taken will be to associate all ecological restoration with the adequate planning framework (Component 1) and to reduce pressures through more productive and alternate livelihoods (Component 3).

Component 1. Integrated and participatory planning for the sustainable development of ecosystems

Outcome 1. The use of land and natural resources is informed and governed by an integrated, participatory and gender sensitive approach.

73. While there currently exists some land use plans for some communes developed under the umbrella of the PNIDDLE project in May 2017 and known as Communal Development Plans (Plan de Développement Communal (PDC)), most of them are not integrated (e.g. do not consider environmental issues such as water, climate, soils, biodiversity, and agro-biodiversity and the interplay between these dynamics), nor are they participatory or gender sensitive. In addition many may be based on inadequate or out-of-date information, are not regularly updated and are not enforced by local and national authorities due to a lack of capacity.

74. Under Outcome 1, the project will provide support to the relevant governmental and territorial authorities, including MEDD, MHA, MA, ME, and DREDDs, to better understand and manage the ecosystems, using updated, relevant information and based upon a participatory approach to land use planning. The purpose of the activities under this component is to increase the understanding of the value (economic, cultural) of ecological services, so that development planning and interventions take environmental issues into full consideration. In communes where PDCs are in place, the goal will be to audit them and ensure environmental considerations are integrated into them in a participatory and gender sensitive manner. In communes where PDCs do not exist, the project will work with authorities and stakeholders to develop them. Outcome 1's success will be measured by the extent to which agro-biodiversity, biodiversity, forest, soil, water conservation and climate change are integrated into community driven land use plans in each of the project's three landscapes and based on a participatory and gender sensitive approach.

Output 1.1. A platform to monitor ecological and socio-economic indicators is created and serves as a basis for the land use planning

75. In order to achieve this output, the project will provide support towards the design and deployment of a monitoring platform through which governments and local planners will be able to access timely and relevant data on specific ecological and socio-economic indicators in order to ensure land and water resources use and productivity is maximized without undermining or degrading the plant, animal and crop

diversity, water and land resources. This activity will build on the efforts undertaken by the MEDD with Monitoring and Evaluation System for the National Environmental Action Plan (SEPANE - Suivi Evaluation du Plan d'Action National sur l'Environnement), by integrating socio-economic indicators and locally relevant indicators, including relevant indicators from the GEF tracking tools. These socio-economic indicators are included in the platform in order to monitor and measure the socio-economic causes of environmental degradation and the socio-economic benefits of reversing environmental degradation. Indicators will include the following:

Ecological Indicators	**Socio-economic indicators**
Rainfall/temperature data	Population, gender and age disaggregated, and density, and other demographic data
Surface water availability (ponds)	Number of heads of cattle and productivity (meat/milk)
Density of vegetative cover	Average income per household per season
List and population of various landraces, trees, plants, animals, insects	Average water consumption per person/cattle
Presence of invasive species	Average productivity by hectare
Extent and nature of land degradation	
Deforestation rate	

76. A web tool will be created to allow interactive use of the platform by regional and local authorities, and training will be provided on access, use and maintenance of the platform. Modalities for providing access to international organizations, private sector and non-profits will also be defined, including fee-based accesses to ensure a flow of resources is maintained for the ongoing operation of the platform. Specific categories of data providers will also be identified, so that the platform is updated on a regular basis. Ongoing costs of maintenance of the platform will be borne by the Direction de la Planification, Coordination Intersectorielle et des Données (DPCID) under the MEDD after the project duration.

77. Following the definition of the indicators and the establishment of the platform, the project will also support an initial baseline assessment for all indicators focusing on the project's first three landscapes, with a view of expanding the monitoring to other landscapes after completion of the project. As a result of this activity, authorities will have a set of key baseline indicators for monitoring ecosystem health, including biodiversity and socio-economic indicators in the three targeted landscapes. Capacity will be strengthened to undertake appropriate monitoring and surveillance of the landscapes, including training of users. The results generated by the platform will be fed into the land use plans (Output 1.2) and the knowledge management (Outcome 5), in order to provide objective measurements of progress.

Activities

1.1.1 Define ecological indicators in a participatory manner with governments, local communities and authorities
1.1.2 Establish baseline assessment for all selected indicators
1.1.3 Operationalize the platform, including web tools and modalities for access
1.1.4. Train users, operators, and data providers

Output 1.2 An integrated, participatory and gender-sensitive land use plan for each project landscape is established, on the basis of a consensus amongst diverse land users

78. Under this output, the project will support strengthening of local capacity to undertake participatory planning for more rational land use planning. This will help preserve high conservation value areas, avoid land use conflicts and resolve issues around land tenure, as well as to set aside areas for conservation and regeneration, placed under the stewardship of communities. Importantly, it will help reconcile interests of pastoralists and farmers who use the land in the project zones. This will entail supporting the MEDD in the design of comprehensive maps of the three landscapes that provide a snapshot of current land use and land users, including movements through time. This will be done concurrently with the assessment of indicators selected under Output 1.1.

79. On the basis of those maps, local communities, NGOs, associations and authorities will be brought together to support participatory land use plans that are based on the recognition of ecosystem services (using indicators developed for the baseline assessment and monitoring platform). This will include training and awareness raising for communities and local authorities alike, in order to ensure that communities identify and understand the value of ecological services that they wish to protect and rehabilitate. Various tools and methods will be introduced to local communities and authorities during this process, including for example the Resilience, Adaptation Pathways, and Transformation Assessment (RAPTA) Framework, which will enable communities to identify possible solutions to their sustainability challenge. The project will also build on FAO-specific assessment methods, such as the Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists, to enable communities to identify their needs and capacities.

80. Using a fragile ecosystem feature as an entry point will provide a focus for conservation efforts by the communities, help define stronger participatory monitoring frameworks, and build local buy-in around shared conservation and sustainable use objectives. At the end of this process, all three landscapes selected by the project should have a consensus-based land use plan that balances conservation priorities with sustainable use and management mechanisms. Community-based appropriate management systems will be devised and promoted for each key part of the integrated landscape (forests, water bodies, agricultural land, and rangelands). The Land Use Plans will be approved by the project's Steering Committee and local authorities as well as updated annually under the supervision of local authorities and the project's Steering Committee.

Activities

1.2.1 Map the ecosystems, land uses and users in the three landscapes (providing therefore the exact geographic coordinates of the intervention sites)
1.2.2 Elaborate the land use plans in a participatory manner
1.2.3 Validate land use plans in a participatory manner
1.2.4 Annually update land use plans according to the monitoring platform

Output 1.3. One new terrestrial protected area is formally established and integrated into the concerned landscape's land use plan

81. The project will also support the MEDD to move towards the designation of a biosphere reserve (BR) in the area of El Atf. Biosphere reserves are a UNESCO denomination for areas that promote solutions reconciling the conservation of biodiversity with its sustainable use in areas of particular scientific interest. Reserves are used to better understand and manage changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity. Biosphere reserves contain three interrelated zones that aim to fulfil three complementary and mutually reinforcing functions:

(i) The "core area" includes a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation.
(ii) The "buffer zone" is used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education.
(iii) The "transition area" is the part of the reserve where the greatest activity is allowed, fostering economic and human development that is socio-culturally and ecologically sustainable.[23]

82. This approach to protected areas is particularly relevant to the El Atf zone, given it is a multi-use zone, currently used for pasture, a source of water for livestock and humans living in the wider region, and home to approximately 14,000 people. El Atf is host to landraces of priority crops including pearl millet, fonio millet, cowpea, yam and Bambara groundnut), plant species that have been identified as threatened in Mauritania's NBSAP 2011: *Adansonia digitata, Anogeissus leiocarpus, Sclerocarya birrea*. In addition, El Atf is also host to species of medicinal value such as *acacia nilotica*. In addition, according to local populations, several animal species are threatened and getting extinct such as gazelle dorcas, guinea fowl (*numida meleagris*), turtles (*geochelone sulcata*) and porcupine (*hystrix cristata*).

[23] http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/

83. The designation of the BR will follow a participatory process, beginning with consultation workshops to raise the awareness of stakeholders as to the meaning – benefits and responsibilities - of living in a BR. Training and awareness raising will target representatives of the relevant ministries, local authorities, local NGOs and local populations. Based on these consultations, the boundaries of the biosphere will be defined by the MEDD, and mapped, and supporting documents for the formal designation will be produced for submission to UNESCO. Lastly the development of management plans for the BR will be developed in consultation with the local populations, local authorities, NGOs and relevant ministries.

Activities

1.3.1 Awareness raising and consultation workshops towards mapping and designation of biosphere reserve in El Atf

1.3.2 Mapping and information gathering to support application to UNESCO

1.3.3 Formal designation, ratification, and development of management plans

Component 2. Conservation, restoration and sustainable management of the landscape / ecosystem.

Outcome 2. Land degradation is reduced, habitats are rehabilitated, and vegetation cover and soil carbon sinks are restored through a participatory and integrated ecosystem approach

84. Currently in the project area agricultural and pastoral land and forest cover are being fast degraded largely due to unsustainable use caused by mounting population pressure and economic necessity. For example, semi-protected forests are being highly degraded to respond to local demand for firewood. Overgrazing takes place in areas close to watering points, depleting the soil. There is little capacity to prevent and manage the fires that pose threats to harvests and forests alike.

85. Under Outcome 2, the project will undertake restoration of degraded areas, including forests and rangelands. It is expected that this will help maintain habitats for key species of birds and small animals, while providing soil fertility improvements. In order to ensure that the pressures on land cover are reduced, the project will also develop interventions to promote the use of alternative technologies, including biogas and improved cook stoves. This will help ensure that carbon stocks are gradually restored and maintained in the project zones. In total, the project expects to enlist local communities to reforest 3,000 hectares and to restore 2,355 hectares of degraded forest land. Outcome's 2 success will be measured by the number of hectares under sustainable management. The project aims to bring 160,355 hectares under sustainable management, while sequestering and avoiding 4.4 million $tCO_{2\ eq}$, through the following outputs:

Output 2.1 Land degradation is reduced and vegetation cover is restored

86. Under this output, the project will restore two "forêts classées", or semi-protected forests, in El Atf zone, which are the Ngouye and Yama Ndiaye forests, representing 2,355 hectares. This will be done using assisted natural regeneration (ANR) and will improve hydrological functions, nutrient cycling, and increase carbon stocks as to contribute to climate resilience of land systems and long-term productivity of farmlands.

87. ANR accelerates natural regeneration by removing or reducing barriers to natural forest regeneration such as soil degradation, competition with weedy and invasive alien species and fire, grazing and wood harvesting. It encompasses an array of activities such as fencing to prevent overgrazing, making fire lines to prevent fires from spreading, and enrichment planting. Limited use of areas under ANR is usually permitted (for example grass cutting) under a community-based management system. The benefits of ANR include timber production, biodiversity recovery, and cultivation of crops, fruit trees and non-timber forest products in the restored forests. It is also cheaper than conventional reforestation as it avoids the costs of propagating, raising and planting seedlings. It is most effective at landscape level to achieve watershed protection and soil conservation[24]. The project will support efforts by local communities to

[24] Shono et al, 2007

undertake ANR in the two areas, through training and targeted material costs for fencing and monitoring. The activity will be linked with support provided under Output 2.1 to the fire prevention committees.

88. In addition, an estimated 500 ha of pasture land will be fenced off to create exclusion zones ("mise en défense") with high regeneration potential (identified through Activity 1.2). The project will provide material and incentivize community labour to put in fences, and enrich soil by planting adapted fodder varieties. The maintenance of the fences will then be ensured by local populations and authorities and monitoring of the areas will be conducted by local authorities.

89. The project will also support reforestation and afforestation in all three landscapes, but with a focus on the Great Green Wall corridor (3,000 ha in total). This will include providing support to local nurseries for the provision of seedlings that will be used by communities in undertaking reforestation works, in areas designated for such purposes under the Land Use Plans. Indigenous, high value multi-use species will be used such as *Grewia bicolor* and *Acacia mellifera*. A final selection of species will be undertaken during the land use planning exercises, using participatory approaches, taking agro-biodiversity into consideration.

90. For reforestation works, low cost methods with high success rates will be pursued, such as Land Life's Cocoon technology. The Cocoon technology is a biodegradable incubator that is planted with tree seedlings and delivers small amounts of water directly to the tree's roots. It eliminates the need for irrigation and uses 1000 times less water. The Cocoon degrades over time and therefore does not require any maintenance or removal efforts or costs. First it uses 1 to 10% of water used by traditional tree irrigation systems. It also costs 3 to 10 times less than alternatives such as drip irrigation and is also cheaper than planting and coming back to manually water the plants. It can also be used to plant in all seasons, including hot and dry summer periods, which is a great advantage for restoration projects. Last but not least, the Cocoon has survival rates of 80-95% compared to 0 to 40% in areas where trees are planted without support.

91. To support the forest restoration and management activities, the project will increase the capacity of local fire-fighting committees to effectively prevent and manage fire hazards. Every year, bush fires affect thousands of hectares of pasture between July and November. In order to curb their impact on pastures, the capacity of 50 « firefighting committees » will be increased via trainings and the purchase of equipment such as masks, boots, gloves, water reservoirs, and rakes.

92. This will be undertaken in conjunction with activities to establish fire prevention corridors, which are ploughed spaces of 20 meters width that are used to prevent fire propagation. The hay produced during ploughing is collected and stored and can be sold to pastoralists in dry season (April –June) when fodder is rare. Local populations will be trained and paid to carry out the work over 500 kilometers, with a focus on areas protected or restored by the project.

93. Finally, in order to address soil erosion and the advancement of sand dunes, the project will enable dune fixation in strategic areas to ensure the long-term viability of key waterways and arable land. Participatory mapping of areas that need dune fixation will be conducted through Activity 1.2, along with the selection of appropriate resilient species of grasses and trees, the design of rehabilitation plans and of proposed management and maintenance systems. Fixation of dunes will be concentrated around villages, arable land and water ways to protect them against siltation. The project will then train local community members to carry out planting to stabilize the dunes and to undertake required maintenance. Indigenous species that can be used to fix dunes in Mauritania include *Prosopis juliflora* in sand accumulation zones, *Leptadenia pyrotechnica* on deflation zones, *Panicum turgidum* between dunes, *Prosopis chilensis* which is very resistant and recommended for dune fixation, *Acacia senegal, Balanites aegyptieca* and *Acacia raddiana* which are high value species which can be planted in least degraded zones. Other species that can be used are *Ziziphus mauritiana* and *Euphorbia balsamifera.*

94. Lastly, in order to ensure adequate monitoring and enforcement, the capacity of the government's forestry services officers to combat deforestation will be enhanced. This will include the provision of annual trainings and provision of equipment such as GPS, binoculars, uniforms and camping material.

Activities

2.1.1 Restore 2 semi-protected forests in the intervention zone, through assisted natural regeneration
2.1.2 Fight against sedimentation by fixing sand dunes
2.1.3 Establish 500 ha exclusion zones with high regeneration potential
2.1.4 Promote afforestation and reforestation in 3,000 hectares
2.1.5 Fight against bush fires by establishing 500km of fire prevention corridors and through strengthening of 50 committees
2.1.6 Enforce rules against deforestation by strengthening the skills and operational capacity of local forest services

Output 2.2. Alternative or sustainable sources of energy promoted to reduce pressures on forests and biomass

95. The activities under this output are a direct support to the efforts to rehabilitate degraded land and to restore vegetation cover. The need to reduce dependence on fuelwood and the promotion of renewable energy was flagged in the 2006 National Strategy on Domestic Energies. Nationally, fuel wood is the second most used energy source (31,8% of the population) after butane gas (44,6% of the population)[25], whereas 17,5 % of the population uses coal. In rural areas however, the proportion of the population using fuelwood goes up to 58.8%, which creates significant pressures on dwindling forest and biomass.

96. The project will therefore contribute to this national strategy by promoting the use of biogas in densely animal-populated areas. This will be done through media (e.g.radio) and demonstrations. Demonstrations in villages (which will include the distribution of kits to early adopters) will contribute to creating demand by providing local examples of benefits. This will also help determine willingness and ability to pay for other households. In parallel, the project will support the development of micro-enterprises (mostly comprised of women), who will be trained to build and repair bio-digester kits, which they will then be able to use or sell. The project will also supply these micro-enterprises with the initial endowment to being supplying surrounding villages. This will ensure sustainable supply of the technology in the zone, create a new rural value chain, and support women's employment. In total the project will support the manufacturing of 200 bio-digester kits and their dissemination and it is expected that the micro-enterprises will become self-sufficient at the end of the project.

97. This activity will be carried out mainly in El Atf, where large pastures attract both nomads and sedentary populations, making it an area with dense animal population. This makes dung available all year long and in large quantities. This activity is based on the past success of the Mauritanian Association for Self Development (Association Mauritanienne pour l'Auto-Développement (AMAD)), who introduced bio-digesters in 2001 in Brakna and Gorgol with good results. Individual and communal bio-digesters are still operational today in the Ari Hara, Djoudé Djéri and Tokomadji municipalities.

98. All materials required for the construction of the bio-digester are available locally. Those kits include: a digester, pipes and a furnace. Each unit produces enough gas for one household, or several households in the case of the communal bio-digesters. This activity saves households money and reduces women's workload by reducing the amount of wood they must go out and collect. In addition, women who practice vegetable gardening can use the by-product as a fertilizer.

99. Finally, the project will also identify the variety of improved cook stoves that is best suited to the area, the population, cultural requirements, and financial means. Then, local populations, rural entrepreneurs, and particularly youth and women, will be trained to build the improved cook stoves and to distribute them to targeted communities. This activity will simultaneously become a source of alternative income, once the correct price has been established. In the initial project phase, the project will subsidize

[25] Enquête Permanent sur les Conditions de Vie des Ménages, 2014

the manufacturing of the cook stoves and their dissemination, while working with community groups to develop a professional, commercially oriented, value chain. This activity will build on lessons learned and capacity built by the following projects:

- MEDD improved cook stoves project (1996-1998) financed by DANIDA. 28,000 improved cook stoves of Maslaha type were manufactured and distributed.
- GIZ - Programme sous régional sur l'Énergie de Cuisson Économique en Afrique de l'Ouest (ProCEAO) – financed by GIZ and EU. (2010-2014)
- GRET launched a partnership with the Institut Supérieur d'Enseignment Technologique (ISET) to fight against energy precarity and deforestation by modernizing cooking equipment. This "research-action" project aims to distribute 8,000 Fayda-type improved cook stoves in Nouakchott and Rosso. (2015 – ongoing)
- MEDD improved cook stoves project– financed by the Government of Mauritania. (2015 – ongoing)

Activities

2.2.1. Awareness campaign to promote improved cook stoves and biogas digesters
2.2.2 Demonstrate and disseminate technologies for production of biogas, using livestock manure, in areas with high animal density, through support for women producers
2.2.3 Develop and demonstrate the use of locally appropriate improved cook stoves

Outcome 3. Sustainable use and management of water reserves for increased water availability during dry spells

100. The main concern expressed by stakeholders in project landscapes is the lack of water for their livelihoods and health, as well as the ability to sustainably manage water resources. This has been exacerbated in recent years by changing rainfall patterns, increasing sedimentation of water sources, and unsustainable use. Most communities lack communal water management mechanisms that ensure the resilience of the water sources. In addition, capacity to build and maintain water infrastructure, such as water reservoirs, is limited.

101. Because land degradation and water scarcity are at the root of the problems in the targeted area, and are so intertwined, the project intends to increase water availability to support livelihoods and provide much needed respite from the crisis response mode communities are living in currently. Combined with efforts under Outcome 4 to increase productivity (including water use efficiency), this outcome will help remove the key constraints to sustainable agro-pastoral development. Small water works will be promoted, such as small retention dams, stone dykes or the valorisation of wadis and ponds, as well as the adoption of traditional water conservation techniques such as the zaï and half-moon trenches. Best practices in terms of irrigation will be disseminated through farmer training (Outcome 4). Success of Outcome 3 will be assessed by the number of people who have access to water during dry periods. The project aims to increase the proportion by 50% by the end of the project through the following outputs:

Output 3.1. Water storage and mobilisation infrastructure are built and managed in a participatory manner

102. Ponds, rivers and wadis often become heavily silted in periods of drought. Curing them of excess earth and sand can help rehabilitate them and restore water flows when water comes back. The project will support local populations in identifying where this should be done to gain most impact during Activity 1.2 (participatory land use planning) and will compensate the labour of local populations as well as source necessary equipment for the rehabilitation of three ponds.

103. In consultation with the stakeholders, a list of potential interventions and technologies for water retention and mobilization has been shortlisted in this project, which are listed along with technical details in Annex 9. Amongst others, they include water reservoirs and retention through a variety of methods such as zai, half-moon trenches, dikes etc. These techniques reduce erosion, and facilitate water infiltration into

the soil. Five water reservoirs will be created and 30 dikes will be built. Six flow control structures will also be built in chosen wadis and rivers to slow the flow of water during rainy seasons. This will have the benefit of reducing erosion and flooding during rainy seasons. The exact location and technology used will be determined during Activity 1.2 (participatory land use planning).

104. In addition, the project will ensure that at least 100 existing communal wells are equipped with solar pumping technologies, which will have the benefit of reducing energy costs, limiting emissions and reducing time spent by women fetching water and allow them to invest in other activities.

105. Lastly, water user committees will be created and trained in communes where the project rehabilitates and builds water infrastructure. They will be trained to extract sustainable amount of water, and maintain infrastructure over time. Given their primary role in water fetching, women's participation will be required in water user committees.

Activities
3.1.1. Rehabilitate ponds
3.1.2. Build water reservoirs and water retention structures
3.1.3 Build flow control structures
3.1.4 Promote the use of solar pumps for communal wells
3.1.5 Creation and training of water user committees

Component 3. Reduction of pressure on ecosystems through income generation and funding mechanisms

Outcome 4: Increased, diversified and stable sources of income for the local population through more sustainable exploitation of natural resources

106. The population in the project's three landscapes rely heavily on subsistence agriculture and pastoral activities, and face declining productivity and profitability of their activities. Training is available in the project zone however, the farmer/pastoralists in most of the project have not been trained to increase productivity in a sustainable manner, nor to access markets via the production of new, sustainable value chains. In addition, adapted and resistant seeds for fodder, cereals and leguminous crops are not widely available, nor are producer organizations capable of producing quality seeds.

107. Activities under Outcome 4 will assist in the reduction of pressures on ecosystems by adopting a two-pronged strategy. First, technical assistance will be provided to local producers and groups so as to increase productivity from existing agro-sylvo-pastoral value chains. This will include technical training, using the tried and tested Farmer Field School approach, as well as the provision of key productive assets, particularly to increase value addition. Second, the project will support the identification of new, sustainable value chains that support the adequate management of natural resources, conservation of agro-biodiversity, while helping generate new sources of income for local communities. This will include support to the creation of producer groups, acquisition of productive assets, value-chain building, market access support, and technical training. This second strategy will have a particular accent on women-run cooperatives and producer groups, in order to reduce their vulnerability.

108. Success of outcome 4 will be measured by the number of people benefiting from increased revenue sources (from improved productivity and diversified income sources). The project aims to increase that number by 50% for both men and women by the end of the project through the two following outputs:

Output 4.1. **Training, technical assistance and knowledge exchange catalyzed via farmer field school approaches for agro-pastoralists in pilot areas.**

109. Under this output, the capacities of the agro-pastoral community (both women and men) to participate in the identification, development and implementation of technologies and market linkages to promote in-situ agrobiodiversity conservation will be enhanced. The project will work with producer groups to enhance the production and sustainable management of two key endemic species found in the

area: *Oryza glaberrima Steud*.[26] (rice) and *Pennisetum glaucum* (L.)[27] (pearl millet). Community-based management will combine the sustainable use of these cultivars with the empowerment of the rural people that conserve it. The purpose is to increase the professionalization of existing production chains, and thereby to create added income from ongoing activities, leading to improved efficiency in natural resource use.

110. The project will form a partnership with the Centre National de Recherche Agronomique et de Développement Agricole (CNRADA) to support for the production and commercialization of endemic varieties seeds including *Oryza glaberrima Steud*[28] (rice), *Pennisetum glaucum* (L.)[29] (pearl millet), niébé (Vigna unguiculata L.), fonio (acha (Digitaria exilis Stapf) and iburu (D. iburua Stapf)), Bambara groundnuts (Vigna subterranean L. Verdc), as well as fodder. Niébé is a drought-resistant variety of cowpea grown primarily by women throughout West Africa. Not only can it thrive in dry and arid soils of Southern Mauritania, it can improve the soil quality by fixing nutrients. It also has the benefits of being highly nutritious and a good source of protein. Fonio is an indigenous African cereal grain and is experiencing renewed interest in Africa and the rest of the world. It is believed to have nutraceutical properties, as it is used in some areas for managing diabetes. The production of the Bambara groundnut, a traditional crop in certain areas of Mauritania, has all but disappeared in the last decades. Its reintroduction would bring many benefits including nutritional value, restoration of the soil's fertility.

111. Tools and technologies that will be disseminated for improved production will include:

(i) Processing equipment: manual or animal-powered mills to process cereals such as millet, sorghum, maize, wheat, and rice; manual or mechanized grater for onions;
(ii) Tools to transport the harvest to markets (carts, carriages);
(iii) Manual cultivation tools: shovels, harrows, sorter and cleaning machine.

112. The simplest of these machines can be found on the local market, but the more complex ones would have to be imported from Mali or Senegal. These will be especially beneficial to women as they reduce the workload associated with processing cereals and can increase their income.

113. The project expects to reach 10,000 people (including 6,000 women) through agro-pastoral and Farmer Field Schools in the Triangle de l'Espoir. The approach will increase the dissemination and adoption of resilient and sustainable pastoral and agricultural practices with the aim of increasing production and incomes while conserving the environment. Dissemination of sustainable pastoral and agricultural practices will be conducted first through a training of trainers (ToT) targeting the most vulnerable community members, with preferential access provided to women and women's groups. These trained facilitators will then be capacitated to facilitate agro-pastoral and farmer field schools in their communities. The Training of Trainers will also be open to Ministry of Agriculture extension agents, whose responsibility includes support to farming communities.

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[26] Reference of significance: Oryza glaberrima Steud.: Stress tolerance, nutritional and grain quality improvement
IRRI (2007). Annual Report of the Director General, 2006/07. Project 1, Germplasm conservation, characterization, documentation, and exchange. International Rice Research Institute, Manila, Philippines.
http://www.irri.org/science/progsum/pdfs/DGReport2007/Project-1.pdf

[27] Reference of significance: Vincent, H. et al. (2013) A prioritized crop wild relatives inventory to help underpin global food security. Biological Conservation 167: 265–275.

[28] Reference of significance: Oryza glaberrima Steud.: Stress tolerance, nutritional and grain quality improvement
IRRI (2007). Annual Report of the Director General, 2006/07. Project 1, Germplasm conservation, characterization, documentation, and exchange. International Rice Research Institute, Manila, Philippines.
http://www.irri.org/science/progsum/pdfs/DGReport2007/Project-1.pdf

[29] Reference of significance: Vincent, H. et al. (2013) A prioritized crop wild relatives inventory to help underpin global food security. Biological Conservation 167: 265–275.

114. A new cohort of 2,500 farmers will be trained every year, in groups of 25 per Agro Pastoral Field School (APFS). The training provided will focus on the needs of local populations. As such the farmers will select the topics they want to focus on and the trainings will be adapted to their specific needs. Techniques taught will include techniques to promote soil and water conservation to reduce erosion and sedimentation, planting leguminous crops to enhance soil fertility and crop rotation, using animal manure as fertilizer (or using it for biogas production), reducing tillage, and applying integrated pest management, water management and recycling plant residues (composting). Targeted trainings will also be provided through the APFS on transformation techniques and practices, as well as phytosanitary handling and commercialization. In order, to identify best practices suitable to local contexts in the livestock sector, the project will work closely with National Grouping of Pastoral Associations (Groupement National des Associations Pastorales (GNAP)), and Mauritania's Federation of Farmers and Pastoralists (Fédération des Agriculteurs et Éleveurs de Mauritanie (FAEM)).

Activities

4.1.1 Professionalization of producers' cooperatives through training and targeted technical support
4.1.2 Distribution of agricultural assets to support sustainable production and commercialization
4.1.3 Support, through Agro Pastoral Field Schools (APFS), to the production and commercialization of indigenous seeds including *Oryza glaberrima Steud*[30] (rice), *Pennisetum glaucum* (L.)[31], niébé, fonio and bambara groundnut, as well as fodder.
4.1.4 Training and technical support to small producers and pastoralists to increase agro-sylvo-pastoral productivity through APFS, including techniques for water and soil conservation.

Output 4.2 Producer groups established and supported, building biodiversity-friendly value chains and enhanced market access, for alternative income sources

115. Under this output, the project will promote the identification and development of alternative value chains so that the populations in the project area can increase and diversify their income sources, using environmentally responsible techniques. The deployment of technical assistance for new value chains will be based on market studies for 4-6 alternative value chains, which will be conducted in consultation with local populations. Identification of value chains will be conducted according to the principles and process set out in the OECD FAO Guidance for Responsible Agricultural Supply Chains. During project preparation, a list of potential alternative value chains that the project could support was identified, including the following:

- **Balanites trees** to produce "murot blanc" oil – said to be as good as argan oil, it can be used for cooking and cosmetic purposes. There is one company in the area, Project Toogga, which has started processing and commercializing the oil for export abroad. A collaboration will be established with Project Toogga to transfer their expertise to the project's target populations.
- **Moringa Oliefera** is a fast-growing tree, endemic to the Sahel, which is drought and pest resistant. It has thrived in zones with harsh climates where little else is suitable for commercial production. It has been hailed as a new superfood and is increasingly commercialized in Europe and North America for its health benefits. The leaves have many nutrients such as calcium, vitamin C, magnesium, potassium, iron and vitamin A, and protein. In addition, the gum, bark and seeds have anti-bacterial and anti-inflammatory properties, which have been used by local populations in traditional medicine. In addition, its seeds can be used to purify water.
- **Gum Arabic** is collected from the *acacia senegal* tree, gum arabic is used in the food industry as a stabilizer as well as in printing, paint production, glue, cosmetic and some industrial applications.

[30] Reference of significance: Oryza glaberrima Steud.: Stress tolerance, nutritional and grain quality improvement IRRI (2007). Annual Report of the Director General, 2006/07. Project 1, Germplasm conservation, characterization, documentation, and exchange. International Rice Research Institute, Manila, Philippines. http://www.irri.org/science/progsum/pdfs/DGReport2007/Project-1.pdf

[31] Reference of significance: Vincent, H. et al. (2013) A prioritized crop wild relatives inventory to help underpin global food security. Biological Conservation 167: 265–275.

Mauritania used to be an important exporter of gum arabic, but the supply fell as the acacia trees were cut down for coal and construction purposes.

- **Salvadora Tree** produces high value toothpicks, thought to have been used by the Prophet. There is one major exporter in the country, who exports toothpicks to Saudi Arabia.
- **Water lilies'** seeds (grains) are used to make a dish that resembles couscous. Its roots are also consumed and sold on local markets. The flowers and stems are used for decorative purposes. It also has traditional pharmaceutical uses, said to help with arterial pressure. Women are usually the ones who harvest and sell them on local markets. Water lilies are found in ponds and lakes, but in recent years their number has greatly diminished due to drought and sedimentation as well as over harvest. This situation could easily be remedied by collecting tubers and seeds from the Senegal River Valley and use them to sow ponds that have been rehabilitated.
- **Aquaculture** provides a source of livelihoods for a small number of the population in the project zones. Most of the population in the project zone eat frozen fish from the Coast, and sell the fish they produce to Malian exporters. This activity could be developed sustainably with adequate training of local populations and market linkages to private sector actors.
- **Pigeon pea** has been a successful crop in Soudan's Sahel zone in humid zones (e.g. wetlands or behind dams). As a leguminous, it enriches the soil and also can act as wind breaks. It can also become a source of revenue, when sold as livestock feed.
- **Jujube tree or ziziphus Mauritania** has multiple uses. Its fruit can be eaten fresh or dried, and can be transformed into multiple products. It can also be used as fodder for sheep and goats due to its high protein content. It is also a great source of fuelwood, as well as timber, tannin or dyestuff and medicine.
- **Acacia seyal** is a common tree in Southern Mauritania. The gum can be eaten when fresh and used to make a syrup which can be sold on local markets. The bark is also used for animal feed during the dry season. As it has significant protein content, acacia seyal is considered the best fodder plant in some countries. Its flowers can also be used to produce honey.

116. Once supply chains have been selected in a participatory manner, the project will provide training to producer groups in the area. Depending on the supply chain(s) developed, trainings will include: environmentally responsible production techniques, including input management, production and processing where and when necessary, packaging, handling and commercialization. Support to producer groups will also be provided in business management skills and price negotiation to ensure fair trade.

117. Lastly, the project will create market linkages between producers and potential buyers, by organizing workshops or field trip visits for buyers. Discussions are already underway with one such private sector partner, Project Toogga, which produces "murôt blanc" oil from balanites trees. They would help build the capacity of the project's target beneficiaries, and source the raw material from the communities to transform and export it.

Activities
4.2.1 Market studies and participatory selection of alternative supply chains
4.2.2 Training on production, processing and commercialization
4.2.3 Support to the creation of market linkages

Component 4. Knowledge management

Outcome 5. Local and national decision-makers and authorities have an improved knowledge on development and environmental issues on which they are able to base land use planning and natural resources management decisions

118. Local and national decision-makers have limited access to up-to-date and precise data on development and environmental issues, and seldom have the opportunity to make integrated decisions that blend development, water, climate, biodiversity, forest and soil considerations and priorities. In addition, few best practices and lessons learned are disseminated at the local level and within the project areas.

119. This final Outcome seeks to strengthen the institutional implementation and monitoring of the project and its outcomes. The purpose is to create a long-term approach that can be replicated in other areas during subsequent phases. This will include providing support to the participating stakeholders towards the monitoring of program outcomes, outputs and indicators. Success of Outcome 5 will be measured by the number of lessons and best practices identified and disseminated between now and the project's end.

120. The outcome is achieved through one output:

Output 5.1. The project's results and lessons are identified, documented, and reported upon in a timely manner

121. This output includes activities related to the setting up and operation of the project's monitoring and evaluation system. This includes the appointment of a Monitoring and Evaluation Specialist to support the PMU in the collection of data to document project successes. In the first year, the project will conduct a household survey that will establish baseline values for key indicators.

122. Subsequently, the M&E officer will be responsible for preparing the required Project Progress Report (PPR, six-monthly), Project Implementation Reports and other require reports, in close cooperation with the National Coordinator (please refer to M&E Plan section). Project-related "best-practices" and "lessons-learned" will be identified, documented and disseminated via publications, project website and others, in local languages. This will support the development of a long-term upscaling and replication strategy, in particular the development of recommendations on the most appropriate long-term institutional, policy and financial framework to support integrated sustainable development in Southern Mauritania.

123. Lessons learned from land use planning, ecosystem restoration and the development of existing and alternative supply chains that will be tested in the project sites will be analysed and synthesized with a view of providing key information on how to create the most enabling environment for continued integrated programming in the region and, ultimately, in the country. Lessons learned from the implementation of this project will be identified and disseminated, and where possible, pathways for future replication and upscaling will be determined. This will be done by publishing best practices on FAO's website, as well as distributing printed copies to local partners and government.

Activities
Activity 5.1.1 Household survey to establish/revise baseline values for key indicators and review targets and indicators if necessary
Activity 5.1.2 Identification, documentation and reporting on project results
Activity 5.1.3 Issue recommendations to improve natural resources governance and finance their sustainable use
Activity 5.1.4 Communication of results

2.2.3 Project assumptions

124. This project's theory of change is based on the assumption that communities, decision-makers and private sector will easily identify the economic and development potential for enhanced conservation of natural resources. Furthermore, it is expected that the project will test practices and approaches that will be brought to scale, replicated and adapted to other sites in the future through subsequent phases of the project. A key assumption is that national budgets and human resources will be made available for the continuation of project outcomes and results, particularly those achieved in areas of land use planning, information management and institutional capacity development.

125. For most of the activities, it is assumed that the required human and technological resources will be available to implement the actions.

126. As with regards to the increased production of existing commodities and produce, the project also based on the assumption that markets exist for these commodities and that private sector actors are willing to purchase raw or transformed materials from project areas in the long term and at prices that are advantageous to the target population.

2.2.4 Lessons learned

127. This project is informed by key lessons emerging from past projects in Mauritania and the region on the following issues:

Importance of income generating activities and market access[32]

128. Income generating activities are necessary in order to satisfy target populations' immediate subsistence needs, and to ensure quality participation in long-term decision-making. If local populations lack additional or alternative income generating activities, they will not be able, nor incentivized, to protect and restore natural resources. Project PROLPRAF demonstrated that market access is crucial to increasing food security of the most vulnerable segments of the population. For this reason, Outcome 4 of this project explores several opportunities to increase and diversify revenues for local population, including through creating market linkages.

Participatory approach is key, but limited by capacity[33]

129. Participation is key in achieving and securing the fight against desertification and sand encroachment, through local participation in site selection and implementation of the necessary activities. Limited capacity, in terms of low literacy levels and low levels of resources, has limited many projects, even capacity building components of projects. It has also rendered certain activities such as micro-credit challenging. Low capacity also makes generating participation of local populations challenging, especially for women.

Land tenure considerations should be taken into account when embarking on land use planning[34]

130. Rehabilitation of land also requires strengthening of land tenure, otherwise local population lack incentives to invest time and resources in restoring land or investing in its sustainability. Although the project will not directly work on land tenure issues it will coordinate with other initiatives such the FAO regional project that promotes "Improved Governance of Tenure for Shared Prosperity in the Senegal River Basin" in Mauritania, Senegal and Mali. This project has already assessed land tenure governance systems through a Land Governance Assessment Framework (LGAF) in 2016. Complementary assessments of fisheries and pastoralism in the Senegal River basin began in February 2017. In Mauritania, the project team works with civil society partners to build capacity of three focal persons to become trainers on the VGGT. Other trainings and radio forecasts are also planned.

[32] See for example : Biodiversity conservation through rehabilitation of degraded lands of transboundary areas of Mauritania and Senegal (Project 458) – (GEF) (2000-2009), Projet de lutte contre la Pauvreté dans l'Aftout sud et le Karakoro (PASK I) –USAID/FIDA/OPEP (2002-2011), IFAD - Programme de Lutte contre la Pauvreté Rurale par l'Appui aux Filières. PROLPRAF – (2010-2016)

[33] see for example lessons from USAID/FIDA/OPEP - Projet de lutte contre la Pauvreté dans l'Aftout sud et le Karakoro (PASK I) – (2002-2011)

[34] see for example the GEF project on Biodiversity conservation through rehabilitation of degraded lands of transboundary areas of Mauritania and Senegal (project 458) – (2000-2009)

Women's participation is paramount for project success[35]

131. Mauritania has ratified numerous international and regional agreements related to human rights and women's rights, and has also adopted a national strategy to institutionalise gender policies in 2008. Despite this legislative progress, women's agency and their socio-economic situations are often precarious, due to the stronghold of cultural and social forces, their low level of participation in decision-making. In some of the project's zones, women and youth make up 75% of local population, due to men's migration to cities to find employment.

132. The proposed project will aim to break this cycle by consulting women directly, which has already started in the design process. Because women are responsible to get water and fuel wood, activities pertaining to mobilising water resources, e.g. solar water pumps for wells, and that reduce their dependence on fuelwood collection, e.g. improved cook stoves and biogas digesters, will reduce women's workload. In addition, the project will include women in its capacity building activities to allow women to access additional income generating activities in order to reduce their vulnerability. Past successes involving women in decision making with regards to natural resources management include German Technical Cooperation's "Natural Resources Management" project (2014-2017) which has successfully increased 6-fold the participation of women in user's committees.

Site selection should be undertaken carefully[36]

133. It is important to choose activities suitable to the ecological realities of the chosen zone, and to select project sites that are not too dispersed to enable efficiency in staff time and resources. For this reason, the project has chosen to focus on 3 landscapes that are proximate to one another. In order to ensure the activities are suited to the agro-ecological zones, the land use plans will be designed with active participation of the local population. In addition, some sites become inaccessible during the rainy season. This will be taken into account in the planning of the activities.

Local rules for natural resources management should reinforce national legislation

134. The PLEMVASP[37] project implemented rules for local sustainable management of natural resources developed by the associations and cooperatives present in the project intervention zone. These rules complete and reinforce national legislation. Given the local populations had the buy in, these local rules proved successful in resulting in sustainable natural resources management. In catalysing participatory monitoring of social and ecological indicators as well as local land use plans, the PGIEDHD will also lead to local buy-in for sustainable natural resources management.

Hand over to local populations should be formally ensured for sustainability and ownership

Some projects experienced difficulties in handing over operations to local populations, such as PASK I[38]. Either there were delays or the local population was not able to do it, due to limited capacity. Local populations have a crucial role to play in implementing the activities but also in ensuring their long-term sustainability. For example, once trees are planted, local populations must survey the trees and perimeters that are to be protected and restored. For this reason, the project will be involving the communities in developing land use plans, which should encourage them to take ownership of the activities from the very

[35] PNISER (2013-2019) Programme National Intégré des Services d'Eau Rurale (AfDB) and German TC programme 'Natural Resources Management" (2014-2017)
36 Enhancing Resilience of Communities to the Adverse Effects of Climate Change on Food Security in Mauritania - World Food Programme with MEDD – (2014-2018)
[37] Sand Encroachment Control and Agro-silvo-pastoral Development Project PLEMVASP - UNDP, DANIDA and UNSO (ended in 1989)
[38] PASK 1 (2002-2011) USAID FIDA OPEP

beginning. In addition, the platform to monitor socio-ecological indicators will also enhance local populations and local authorities' capacity to take corrective actions quickly when something starts going wrong. Past projects, such as FAO managed Project OUBAME, an integrated watershed project aiming to reduce desertification and poverty, have noted that active engagement of stakeholders and target communities has resulted in developing entrepreneurial spirit and ownership of the initiatives, increasing sustainability of the activities[39].

SECTION 3 – INNOVATIVENESS, POTENTIAL FOR SCALING UP AND SUSTAINABILITY

3.1 INNOVATIVENESS

135. As seen in section 2.1.2, the ongoing initiatives to address sustainable human development have all looked at the underlying problems associated with human development individually. The innovativeness of the proposed project resides in the fact that it will take an integrated and ecosystem-based approach to sustainable human development that also takes into consideration the socio-cultural aspects of the agro-pastoral lifestyle. The proposed project's innovative strategy therefore resides in the fact that it will use such an integrated approach in three specific ecosystem areas that are faced with the root causes affecting sustainable human development (as seen in section 1), and then scale that up to other and larger areas.

136. Another innovation for Mauritania is that the project will combine a productive approach to a conservation approach, targeted particularly at commodities and species that have high conservation and economic value. Efforts to enhance agro-biodiversity by conserving and promoting endemic species that are disappearing will contribute to the resilience of the local food systems.

137. Furthermore, the project will develop alternative supply chains to enable rural communities to augment and diversify their income sources by creating linkages to private sector and access to markets. The supply chains will create added value for products traditionally found in the area such as the balanites tree, which is thought to produce an oil as valuable as argan oil, the moringa tree, whose by-products are increasingly commercialized in Europe and North America and hailed as a super food, acacia gum trees from which can be derived Arabic gum, and the salvadora tree- used for high value toothpicks commercialized Middle East. Other potential supply chains which could be developed in the area are water lilies, aquaculture, and the pigeon pea.

138. FAO is building on its comparative advantage and experience in the country, such as for example by making use of the tried and tested FAO-led Agro-Pastoral Field School approach to support 10,000 farmers (including 6,000 women) in improving the productivity of crops traditionally grown, while building their resilience to climate change.

Cost Effectiveness

139. The interventions selected for inclusion in this project represent the best options for money to create additional environmental benefits in the targeted sites. Various options have been considered, and options recommended on the basis of analysis and consultations. In addition, for specific outputs, additional cost-benefit or viability analyses will be conducted during project implementation. Key findings of the cost effectiveness analysis for each outcome are as follows:

39 FAO. Project OUBAME (Projet interregional de lutte contre la pauvreté et la desertification à travers une co-gestion des bassins versants. (2010-2013) financed by Spanish government.

Component 1: Integrated and participatory planning for the sustainable development of ecosystems

140. This component forms a cornerstone of the program by establishing new and improved processes for science-based land use planning. Beyond the status quo, there is no other alternative option but to strengthen the knowledge base (output 1.1) and to reinforce the consultative processes that govern land use and land management. The project could have opted for a territorial or jurisdiction-based land use planning exercise, but this would have led to inefficiencies and missed opportunities in terms of GEB generation. Our proposed option is to shift the planning systems towards landscape-based planning frameworks to be able to identify environmental trade-offs and benefits more readily. The project also opted for the creation of a biosphere reserve rather than another type of protected area because they allow for scientific research as well as the pursuit of a certain level of economic activity which suits the area best. The project opted not to go beyond the official designation for the time being, essentially for cost reasons.

Component 2: Conservation, restoration and sustainable management of the landscape / ecosystem

141. The options considered for inclusion in this project included total afforestation or reforestation of degraded sites, pasture regeneration through seeding, the development of large-scale no-take zones or conservation areas, and a do-nothing approach. The project considered the costs and benefits of various options and selected the site-specific measures that would maximize the potential for generating GEBs while allowing sustainable development prospects for local communities. All activities under Outcome 2 are associated with livelihoods related activities under Outcome 3. In addition, the project decided to include measures designed to specifically relieve pressures on environmental resources and to remove barriers to the long-term durability of any restoration efforts (e.g. through renewable energy). Therefore, the project will restore existing degraded areas such as "forets classes" through natural regeneration (a low cost effective method), better pasture management and land allocation systems, and the development of community-enforced no-take zones.

142. Regarding reforestation and afforestation, the project will undertake very limited works using economically useful species to maximize benefits through agro-forestry, fodder production, live fencing, and some grasses. In some cases, the plantation of village woodlots may be required – although these come with a higher cost – to ensure wood supply is not met at the expense of a more fragile ecosystem. In order to maximize the efficiency of these measures, fire prevention systems and buffers will also be provided, along with local enforcement capacity.

143. The energy-related measures were also considered in relation to their potential for maximizing the benefits of the ecosystem restoration interventions, as well as generating significant additional benefits for local economies and the environment. For maximum efficiency the project has opted for an approach that seeks to increase private sector participation in the renewable energy sub-sector by creating "value chains" through stimulation of demand and strengthening of supply – this is opposed to the more traditional 100% grant-based delivery models of the past.

144. The other options considered under this Outcome but not retained in this project design included the possibility to undertake solar electrification at scale, the creation of small or medium-sized dams and irrigation infrastructure, and the construction of a large number of wells. These options were excluded due to high costs and the fact that baseline projects were better suited to ensure these investments.

Component 3: Reduction of pressure on ecosystems through income generation and funding mechanisms

145. This component is designed to ensure the sustainable use of natural resources by providing local communities with the ability to plan and undertake economically viable, yet environmentally sustainable, development activities. The project has opted for the most cost-effective and efficient means of providing advice, which is the Farmer Field School model, which provides a low-cost method of learning by doing.

While the initial focus of the project will be to strengthen existing value chains, the feasibility analysis undertaken during the project has also determined that providing added economic opportunity was also a key factor of success for environmental rehabilitation. Therefore, the project will select a small number of promising value chains for additional promotion. Project support will include technical advice, provision of productive assets, as well as commercialization support, to ensure that after project completion, producers are self-reliant.

3.2 POTENTIAL FOR SCALING UP

146. The tools and trainings developed under the various components of this project have the potential to be scaled up and reproduced in other areas of the country. For instance, the development of a knowledge platform that governments and local planners will be able to use to access to data on ecological and socio-economic indicators, as well as the strengthening of local capacities, should be conducive for scaling up. Thus, the initiatives undertaken in this project may be replicated for sustainable human development issues in other parts of the country.

147. By implementing Agro-Pastoral and Farmer Field Schools at the community level, this project seeks to foster the appropriation of sustainable agricultural measures by local populations and the replication of those measures. The training provided in APFS will have a spillover effect, first within each landscape, and then in adjacent landscapes, through the extension agents that will be trained during the project period. In addition, the linkages built with the private sector to develop alternative supply chains can benefit producers beyond the project.

The active involvement of competent regional authorities in all project activities will also help increase the appropriation of the results achieved by these authorities, thereby making it easier for them to replicate these activities in other parts of the region.

148.

Finally, collaborating with other projects and programmes and working in 3 distinct landscapes will promote exchanges and the broader adoption of the activities and sustainable practices by other recipients.

3.3 ENVIRONMENTAL SUSTAINABILITY

149. The planned trainings at the local and institutional levels for the sound and sustainable management of the ecosystems and the services they provide will contribute to the sustainability of this initiative, and so will the improvement of the livelihoods and the diversification of their revenues. More importantly perhaps, the integrated and ecosystem-based approach design of the project will form the basis of its sustainability. It is expected that the creation of direct, observable economic benefits arising from the sustainable use of resources for the targeted communities will create strong incentives to maintain sustainable practices in the longer term.

150. More specifically, innovative water management practices established to sustain land productivity in the face of climate change, such as landscaping drainage control and improved irrigation, water retention ponds and a reduction in flooding event damages, water availability will increase by 20% during the dry season, further increasing agricultural productivity, but also reducing potential damages from flooding events.

151. In addition, the creation of the Biosphere reserve, coupled with the prevention corridors, will lead to putting in place management systems that prevent overgrazing of key areas as well as bushfires.

3.4 SOCIAL SUSTAINABILITY

Stakeholder consultation and engagement

152. A wide range of stakeholders have been involved in the project formulation. First, a launch workshop was held in Nouakchott on May 3rd 2017. The agenda focused on site selection, the identification of relevant initiatives and projects underway, and potential partnerships. The list of attendees is included in Annex 8 on Project Preparation Phase.

153. Local populations were consulted through focus groups during 4 field missions to ensure their needs, priorities and constraints would be taken into account in the design of the project. During those field missions, women's and men's focus groups were held to ensure that both voices were taken into account. Stakeholders noted that rainfall variations and drought may impact the success of the project activities. They also feared that the project would aim to change their livelihood activities. The national consultants reassured them that the intent of the project would be to optimize their activities rather than modify them and assured stakeholders they would be involved in all different steps of the project formulation.

154. Lastly, a validation workshop took place in Nouakchott on 14 December 2017. Comments raised by stakeholders during this workshop were integrated into the final design. Overall participants agreed with the integrated approach and site selection; the need to have multi-stakeholder consultations at all levels for land use planning, and the need to integrate scientific knowledge in land use planning. They stressed the need to better integrate pastoralism throughout the activities. Please refer to Annex 8 for further details.

155. Stakeholders who will benefit from project interventions are the 65,944 people living in the 3 landscapes. The project has been designed so that women will benefit, by being actively included in activities that aim to increase revenues and diversify livelihood sources as well as activities that will facilitate water access (solar pumps for wells) and provide alternative cooking energy technologies such as improved cook stoves – requiring half as much fuelwood – and biogas digesters.

156. The MEDD will benefit from the project as its capacity to monitor socio-economic and ecological indicators will be enhanced through the creation of the platform. In addition, the project will contribute to its goals under the PANE and lessons from the project will be generated which can further the MEDD's objectives. AGMV will also benefit directly as the project will directly contribute to its objectives in Brakna. The Ministry of Agriculture will also benefit as the capacity of its extension workers will be enhanced via the project.

157. Amongst the stakeholders that may be negatively affected are those that collect charcoal for a living, commonly called "charbonniers" in Mauritania, as their activities will be curbed by the project, both by reducing demand and also by increasing enforcement. They will be a priority group for which alternative livelihood options are sought, identified and developed by the project and its baseline. Key stakeholder groups that are participating in the project are listed along with their roles in section 4.1.1.

Grievance Mechanism

158. FAO facilitates the resolution of concerns of beneficiaries/stakeholders of FAO projects and programs regarding alleged or potential violations of FAO's social and environmental commitments. For this purpose, concerns may be communicated in accordance with the eligibility criteria, which apply to all FAO programs and projects. The FAO office in Nouakchott will be the first entry point for project stakeholders to obtain information and place complaints. From there, depending on the nature of the complaint, relevant authorities within FAO will be mobilised.

Disclosure

159. Disclosure of relevant project information helps stakeholders to effectively participate. FAO will disclose information in a timely manner, before appraisal formally begins, that is accessible and culturally appropriate, placing due attention to the specific needs of community groups which may be affected by project implementation (such as literacy, gender, differences in language or accessibility of technical information or connectivity).

160. The validation of the project was organized on 5 December 2017 in Nouakchott where representatives of municipalities and civil society organizations from targeted landscapes were invited to get familiarized with the project objective and scope, and validate the intended work on the ground. The workshop was held in French and Arabic and feedback was welcomed by all participants.

Gender equality

161. A gender sensitive stakeholder analysis was carried out by a national consultant, drawing on focus groups and structured individual interviews with both women and men. The analysis aimed to understand the needs, priorities and constraints of both men and women in order to ensure adequate interventions were included in the project. Traditionally men have been in charge of agriculture and livestock herding, while women have been in charge of vegetable gardening and harvesting of non-timber forest products, in addition to water and fuelwood collection. What united both men and women continuously was the joint need for increased access to water. Women and children are usually in charge of fetching water, and thus activities aiming at easing access to water will primarily benefit women in terms of reducing and easing their workload.

162. As the traditional breadwinners, men have been increasingly migrating to urban centres to seek employment. This has left many women in the position of household head, and women currently make up a larger proportion of the population. Women have proven more stable and reliable interlocutors for interventions given they stay in the project zones and have been better at reimbursing credit. Despite this new dynamic, women have had less access to tenure rights, credit and are underrepresented in the political processes and decision making.

163. Discussions with four stakeholder groups about gender took place: (i) public sector, (ii) non-profit sector, (iii) professional associations (cooperatives, associations of agropastoralists etc.) and (iv) project target beneficiaries at community level. All those stakeholder groups recognized the fundamental role played by women in management of natural resources, given they often work the land along with their husbands or other male family members, in addition to vegetable gardening, as well as making crafts derived from natural resources. Those stakeholders also recognized the need to take into account women in all the project's components and at every step. They also encouraged awareness raising about women's specific difficulties in accessing tenure, credit and decision-making processes.

164. The project will address the needs of women and men through the following activities.

Outcome 1	The project will ensure gender specific and gender-disaggregated indicators are included in the monitoring platform.
	The project will ensure both women and men are involved in the development of the land use plans.
	The designation of the protected areas will involve men and women equally in the consultation process. Ultimately, it will also benefit both groups as it will ensure the long-term viability of the pastures, water resources, and biodiversity contained in El Atf zone, as well as the surrounding forests.

Outcome 2	While the manual labour to conduct activities such as ecosystem restoration will most likely be male, the results are likely to benefit women. For example, sand dune fixation will reduce sedimentation of waterways, which should ease long-term access to water.
	The promotion of biogas digesters and improved cook stoves will benefit women as they will reduce the time they spend on collecting fuelwood, as well as providing health benefits. Training on the construction and maintenance of cook stoves as well as biogas digesters will also be provided to women and women's groups, in order to create employment and value addition.
Outcome 3	The introduction of solar pumps for wells will primarily benefit women as it will reduce the time spent collecting water. Improved access to water for gardens, small livestock and domestic uses will also have benefits for women
Outcome 4	Both women and men will receive training to increase productivity from their agricultural and pastoral activities. Out of a total of 10,000 trainees, 6,000 trainees will be women and 4,000 will be men. This is due to the fact that there is a higher proportion of women in the project zone than men.
	This activity will include both men and women in the selection of supply chains to be developed for each landscape. Many of the supply chains in the long list of potential supply chains to be developed.

Indigenous peoples[40]

165. To date, there is no universally accepted definition of indigenous peoples. The diversity between regions and countries, and the differences in background, culture, history and conditions have proved extremely difficult for the development of one single definition at the international level applicable to all indigenous communities. In accordance with international consensus, FAO will abide by the following criteria when considering indigenous peoples:

(i) Priority in time, with respect to occupation and use of a specific territory;
(ii) The voluntary perpetuation of cultural distinctiveness, which may include aspects of language, social organization, religion and spiritual values, modes of production, laws and institutions;
(iii) Self-identification, as well as recognition by other groups, or by State authorities, as a distinct collectivity; and
(iv) An experience of subjugation, marginalization, dispossession, exclusion or discrimination, whether or not these conditions persist.

166. According to this definition, indigenous peoples are not present in the project areas, though there are minority groups and vulnerable groups that have been consulted with during project preparation and from which consent was sought and provided, just as from other stakeholders of the project. Paragraphs below on human rights based approaches develop this further.

Human rights based approaches, including right to food, decent work, accountability to affected populations

167. The project will contribute to achieving the right to adequate food and decent rural employment through Outcomes 3 and 4 which aim to increase revenues from agro-sylvo-pastoralism and to strengthen the natural resource production base. The project will build the capacity of the local population to increase productivity and resilience on their existing parcels and crops as well as livestock productivity, including by providing access to resilient seeds and varieties. Last but not least, it will also promote alternative value chains which could further increase access to food and diversify nutrition sources, with a focus on women and most vulnerable groups.

168. The most vulnerable people have been identified as women and the Haratin people. Both of these groups have traditionally been disenfranchised, and have had lower access to resources and services. The

[40] Indigenous peoples is the internationally agreed term (United Nations Declaration on the Rights of Indigenous Peoples) and it encompasses tribal peoples, natives, First Nations, pueblos originarios, pueblos autóctonos, nomadic and pastoralists, aboriginal and traditional peoples.

project will engage with these two groups through multiple trainings as well as ensure they are represented in the development of the land use plans and all other activities.

169. The project will seek to engage with the affected populations through Activity 1.2 in terms of formulating land use plans and their annual update. In relation to the right of access to land, land use rights, the project will work following the principles of FAO's voluntary guidelines on land tenure, and in cooperation with other national projects and programs that aim to secure access to land for women and Haratin communities.

170. Throughout all activities and operations, FAO will respect the legal and customary rights of all beneficiaries, with a view of supporting collaborative management arrangements and avoiding resource-based conflicts among users and groups.

Capacity development

171. The project will address all three capacity development dimensions systematically, namely strengthening individual capacities (e.g. knowledge, skills and competencies), organizational capacities (e.g. performance of organizations, cross-sectoral, multi-stakeholder coordination / collaboration mechanisms) as well the enabling environment (e.g. sound regulatory and policy frameworks, institutional linkages and enhanced political commitment and will). All activities have been designed with the purpose of building capacity in an iterative manner, on the basis of capacity needs assessments that were conducted during the project preparation phase. A number of project indicators are directly related to capacity or reflect a change in state as a result of capacity development.

172. The table below highlights key capacity development elements in each outcome:

Outcome 1	This outcome builds the capacity of government stakeholders, land use planners and communities to access, analyse and understand information on environmental conditions, and to use the information to support the development of more appropriate allocations and use mechanisms. Capacity strengthening will include both individual and institutions, and will be delivered through training as well as through the provision of technical support towards the realization of specific products or outputs. Under this outcome, capacity of the MEDD to identify, designate and manage protected areas will also be strengthened.
Outcome 2	This outcome focuses on the local communities capacities to identify areas of degradation and to implement concrete solutions, including better management of natural resources. The project will also strengthen the capacity of government institutions for monitoring, surveying and enforcement, as well as for the delivery and execution of environmental rehabilitation plans. In addition, the capacity of private sector, producer groups and vulnerable people will be increased towards the use and dissemination of renewable or efficient energy sources. This capacity strengthening will be achieved through targeted trainings, technical assistance, provision of materials and through awareness raising campaigns.
Outcome 3	Under this outcome, local capacity to manage scarce water resources will be developed, including through the provision of support for user groups and trainings.
Outcome 4	Outcome 4 will strengthen the capacity of local groups, producers, agro-pastoralists and women to undertake improved environmentally responsible agriculture with a view of sustainably increasing income and food security. The main approach used for this outcome is the Agro-pastoral field school model, which is a recognized approach for self-identification of capacity needs and training.
Outcome 5	Outcome 5 will increase institutional capacity to identify and upscale successful results from the project, including in particular the development of an upscaling strategy, a next phase of the project, and the development of governance recommendations for Southern Mauritania.

SECTION 4 – INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

4.1 INSTITUTIONAL ARRANGEMENTS

4.1.1 Roles and responsibilities of main institutions

173. During project preparation, all potential stakeholders were identified, their interests and capacities were assessed.

174. The main Executing Partner will be the MEDD who will work through its decentralized offices in the Regional Directorates (DREDD). MEDD will nominate a National Project Director whose task will be to provide oversight to project activities. At the request of the MEDD, FAO will provide support services to the project management, including support for procurement, tendering, and enter into agreements with service providers. The request for these services to FAO can be found in Annex 12.

175. Key technical execution partners have been identified as follows:

Institutions/Organisations	Mandate	Role in the project
Ministère de l'Environnement et du Développement Durable (MEDD)	Responsible for the development, implementation, and monitoring and evaluation of policies, strategies, initiatives and sustainable management of natural resources; MEDD ensures the promotion of and makes sure that issues related to climate change, the fight against desertification and biodiversity conservation are taken into consideration in sectoral strategies and programs. It is responsible for monitoring and implementation of the UNFCCC, the UNCCD and the CBD in the country.	Lead Execution Partner Chairs the Project Steering Committee Support for Outcomes 1 and 2
Agence Grande muraille verte (AGMV)	The mission of the AGMV is to "take effective and urgent measures in the drylands of Africa, to halt/reverse the land degradation, impoverishment of biological diversity, to ensure that ecosystems are resilient to climate change and continue to provide essential services by 2025, contributing to human well-being and poverty eradication".	Support for Outcome 1
Ministère de l'Intérieur et de la Décentralisation (MIDEC)	This department is responsible for both the territorial administration and municipalities. The Walis and the Hakems will provide support to the creation or the revitalization of community associations. The municipalities will contribute to the dissemination of the project's results while helping their ownership by the beneficiary communities.	Member of the Project Steering Committee Support for Outcome 1
Ministère de l'Hydraulique et de l'Assainissement (MHA)	The MHA manages water policy. The "Direction hydraulique" (DH) is responsible for water management and the National Water Resources Center (CNRE) is responsible for the knowledge and monitoring of water resources. These structures will play an important role in water supply for people and infrastructure developments of wetlands and watersheds. The Department of Hydrology and Dams is a structure in charge of drinking water.	Member of the Project Steering Committee Support for Outcome 3
Ministère de l'Agriculture (MA)	The Agriculture Department is responsible for the development of facilities and production of vegetable crops. This structure will have a role to	Member of the Project Steering Committee Support for Outcome 1 and 4

	play in the management and use of water resources for irrigation. The Rural Development Directorate is responsible for the construction of retaining dams and structures for collecting water runoffs.	
Ministère de l'Élevage (ME)	This department's overall mission is to design, implement, monitor and evaluate government policies on the development of animal husbandry. As such, it is responsible for, among other things, (i) contributing to the technical support of the producers; (ii) promoting the structuring of the pastoral world; (iii) providing necessary support and technical advice on animal husbandry for the sustainable improvement of production and productivity.	Member of the Project Steering Committee Support for Outcome 1 and 4
Ministère des affaires sociales, de l'enfance et de la famille (MASEF)	This ministry has the responsibility of ensuring the inclusion of gender into sectorial policies and to work directly with communities. Its activities are transversal and diversified.	Member of the Project Steering Committee
Ministère de la Pêche	The Minister of Fisheries has the overall responsibility of designing, coordinating, promoting and monitoring the implementation of government policy in the field of fisheries. Part of its functions are: (i) the development and conservation of fishery resources and aquatic ecosystems; (ii) the health inspection of goods, facilities and production areas of fisheries and aquaculture; (iii) the promotion of responsible fishing in marine, brackish and inland waters.	Member of the Project Steering Committee Support for Outcome 4
Ministère de l'Habitat, de l'Urbanisme et de l'Aménagement du Territoire (MHUAT)	The Ministry of Habitat, Urbanism and Land Use planning is responsible for issues related to land tenure.	Member of the Project Steering Committee Support for Outcome 1
Tadamoun	Tadamoun's mission has three components: (i) fighting against the impacts of slavery (ii) integration of Mauritantian and (iii) fighting against poverty. Tadamoun is responsible for implementation of the Strategic Framework for the Fight against Poverty, programmes aiming poverty eradication in all of Mauritania's regions, de la pauvreté dans toutes les régions de Mauritanie.	Member of the Project Steering Committee
National NGOs, Groupement National des Associations Pastorales (GNAP), la Fédération des Agriculteurs et Éleveurs de Mauritanie (FAEM), women cooperatives, AGLC, etc.	Civil society will be put to contribution in this project with the role of key partners in the implementation of the project, particularly for the management of the project, the strengthening of community organizations and producers' capacities, the establishment of nurseries, organizing market gardens, raising awareness, etc. To fulfill their roles, these organizations will be trained in the areas corresponding to their field of action in the project.	Members of civil society will support the dissemination of improved and renewable energy technologies (Output 2.2) of professionalization of producer organizations (Output 4.1)

Independent consultants and/or think tank	This group consists of operators with different skills in the areas of: (i) the animation, (ii) the training and management of organizations, (iii) the support to community organizations; (iv) the support to marketing, (v) supporting the preparation of action plans of community organizations, (vi) training for women and youth of partner villages, (vii) conducting various studies, etc.	Independent consultants will support the implementation of several activities including: • Three site coordinators • National monitoring platform consultant • International monitoring platform consultant • National land restoration consultant • National consultant protected areas • International consultant protected areas • National consultant renewable energy • National consultant water infrastructure • National consultant agronomy • International consultant supply chains • National consultants supply chains • International consultant, mid term evaluation • International consultant, final evaluation
Centre National de Recherche Agronomique et de Développement Agricole (CNRADA)	CNRADA conduct research in the field of science and technology, and agricultural production expertise. They can help the project through various trainings and making available the results of their research that are related to the areas of the project.	CNRADA will support the production and commercialization of endemic varieties seeds including Oryza glaberrima Steud[41] (rice), Pennisetum glaucum (L.)[42] (pearl millet), niebe, fonio, Bambara groundnuts, as well as fodder (Activity 4.1)
Agence nationale pour le développement des énergies renouvelables (ANADER)	ANADER is the delegated supervisor for all major projects in the field of renewable energy. To this end it aims at putting the conditions in place for the development and use of national expertise in the country, to enable a quick and seamless access to functional energy systems to a greater number of people, particularly in rural areas.	ANADER can share its expertise and lessons learned for the development promotion of renewable and improved energy sources to alleviate pressure on forests (Output 2.2).
Private sector	e.g. Project Tooga	They will be a channel to market access for small producers in the Project's 3 landscapes. Private sector will be a critical stakeholder in the creation of links to markets (Activity 4.2.3).

[41] Reference of significance: Oryza glaberrima Steud.: Stress tolerance, nutritional and grain quality improvement IRRI (2007). Annual Report of the Director General, 2006/07. Project 1, Germplasm conservation, characterization, documentation, and exchange. International Rice Research Institute, Manila, Philippines. http://www.irri.org/science/progsum/pdfs/DGReport2007/Project-1.pdf

[42] Reference of significance: Vincent, H. et al. (2013) A prioritized crop wild relatives inventory to help underpin global food security. Biological Conservation 167: 265–275.

4.1.2 Coordination with other initiatives

176. In addition to the projects mentioned in the baseline section, the proposed project will coordinate with other existing projects (GEF funded and non-GEF funded) in order to capitalize on related initiatives that may provide support for this project's activities. Initiatives with which coordination will be necessary will include the following:

177. **The Great Green Wall initiative:** Given the scope of the GGW initiative, the current project will work closely with the GGW coordination team, to assist in implementation of the project in Brakna, in particular in terms of monitoring of ecological conditions, reforestation and forest conservation, and promotion of livelihoods.

178. **The Continental wetlands adaptation and resilience to climate change project (IUCN)** is a GEF-funded project that will be implemented in the Great Green Wall area of Mauritania. The project's four components are: (i) restoration and rehabilitation of continental wetlands (ii) improvement of the resilience and the capacity for adaptation of populations living near to wetlands (iii) management of knowledge on wetlands and (iv) communication, monitoring and assessment of the project. The project is scheduled to start in 2018 until 2022.

179. The project will also seek to cooperate with other GEF-Funded initiatives, including in particular:

- the IFAD supported project "Poverty Reduction Project in Aftout South and Karakoro – Phase II (PASK II)"
- The AfDB project "Improving Climate Resilience of Water Sector Investments with Appropriate Climate Adaptive Activities for Pastoral and Forestry Resources in Southern Mauritania"
- The UNEP supported "Development of an Improved and Innovative Delivery System for Climate Resilient Livelihoods in Mauritania" project
- The World Bank implemented "PSG-Sustainable Landscape Management Project under SAWAP".
- The WFP and Adaptation funded project on "Improving the resilience of food security for communities facing the negative impacts of climate change" (PARSACC)

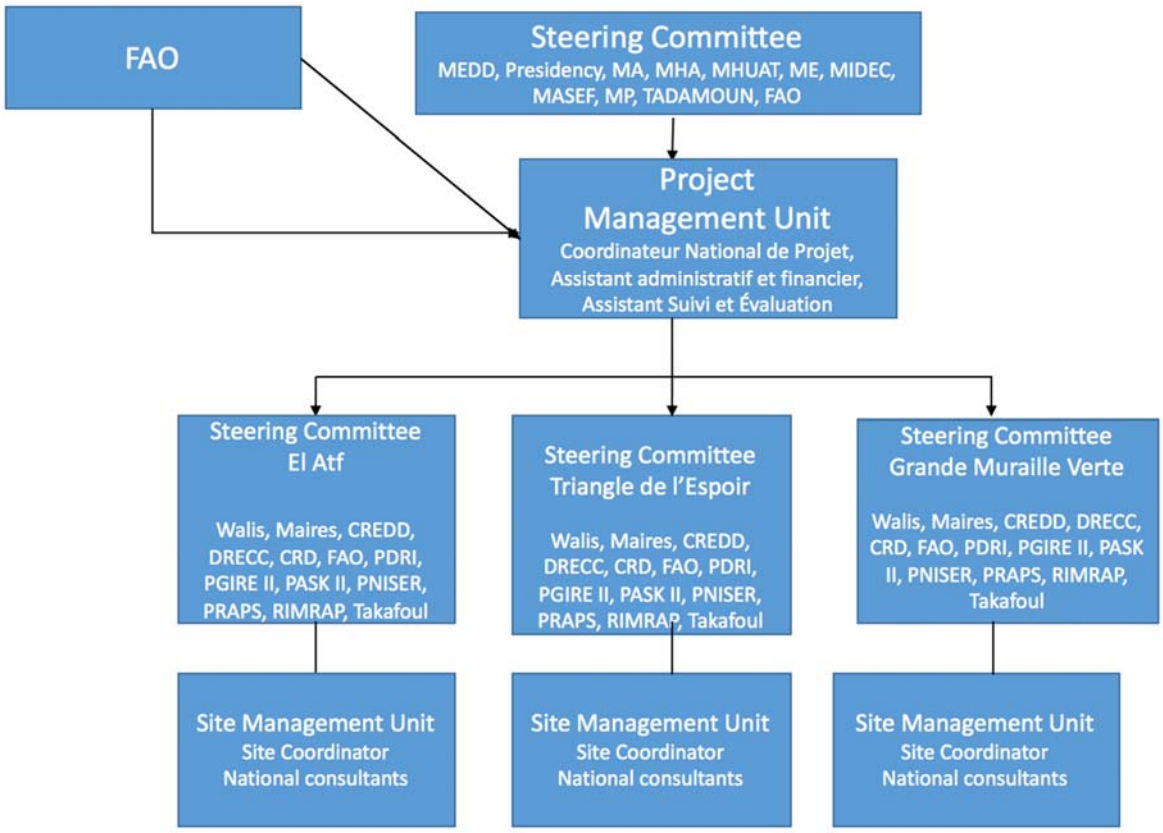
180. **Observatoire du Sahel et du Sahara** (OSS): In its Strategy 2020, the organization's work revolves around two programmes: (1) the land programme, dedicated to observation, environmental monitoring and monitoring-evaluation, and (2) the water programme, dedicated to the sustainable management of shared water resources in the Sahara-Sahel region with a focus on transboundary aquifers.

181. All of these projects can provide useful technologies, knowledge and systems on which this new initiative will build. Active coordination among agencies will be pursued through the FAO Office in Mauritania, as well as through the coordination of the regional representations of the Mauritanian government. In addition, coordination will take place at project sites via the contracted site coordinators, and the Steering Committees for each landscape.

4.2 IMPLEMENTATION ARRANGEMENTS

182. **A Project Steering Committee** (PSC) will be established and chaired by the Ministère de l'Environment et Développement Durable (MEDD). It will be comprised of representatives from FAO, Presidency, Ministère de l'Agriculture (MA), Ministère de l'Hydraulique et de l'Assainissement (MHA), Ministère de l'Élevage (ME), Ministère de l'Interieur et de la Décentralisation (MIDEC), Ministère des Affaires Sociales de l'Enfance et de la Famille (MASEF), Ministère de Pêches, Tadamoun and representatives from the local steering committees. The National Coordinator (see below) will be the Secretary to the PSC. The PSC will meet at least two times per year to ensure:

- Oversight and assurance of technical quality of outputs;
- Close linkages between the project and other ongoing projects and programmes relevant to the project;
- Timely availability and effectiveness of co-financing support;
- Sustainability of key project outcomes, including up-scaling and replication;
- Effective coordination of government partner work under this project; and
- Approval of the six-monthly Project Progress and Financial Reports, the Annual Work Plan and Budget.



183. The members of the PSC will each assure the role of a Focal Point for the project in their respective agencies. Hence the project will have a Focal Point in each concerned institution. As Focal Points in their agency, the concerned PSC members will (i) technically oversee activities in their sector, (ii) ensure a fluid two-way exchange of information and knowledge between their agency and the project, (iii) facilitate coordination and links between the project activities and the work plan of their agency, and (iv) facilitate the provision of co-financing to the project.

184. In addition to the National Project Steering Committee, there will also be local steering committees for each of the tree landscapes. They will allow cooperation for the implementation of activities in Component 2 and 3 of the project. They will be responsible to implement the annual action plans approved by the Steering, and to support rural communities achieve the project's objectives. Each will be composed of walis, mayors, Conseils Régionaux de l'Environnement et du Développement Durable (CREDD), Délégations Régionales de l'Environnement et du Développement Durable (DREDD), Commissions Régionales de Développement (CRD), FAO, and site coordinators/facilitators.

185. A **Project Management Unit** (PMU) will be established within the MEDD, and will include:

- a National Project Coordinator (NPC);
- a Monitoring and Evaluation officer;
- a Finance and administration officer.

186. These core staff will be supported by long-term and short term technical consultants including:

- Three site coordinators
- National monitoring platform consultant
- International monitoring platform consultant
- National land restoration consultant
- National consultant protected areas
- International consultant protected areas
- National consultant renewable energy
- National consultant water infrastructure
- National consultant agronomy
- International consultant supply chains
- National consultants supply chains
- International consultant, mid-term evaluation
- International consultant, final evaluation

187. The ToRs of the PMU staff and key consultants are provided in Annexes 6 and 7. The PMU staff will be recruited by the project, will report to the NPC and will have the obligation to provide progress reports to the FAO, as GEF Agency.

188. Some key functions of the PMU are:

- Technically identify, plan, design and support all activities;
- Liaise with government agencies and regularly advocate on behalf of the project;
- Prepare the Annual Work Plan and Budget (AWP/B) and monitoring plan;
- Be responsible for day-to-day implementation of the project in line with the AWP;
- Ensure a results-based approach to project implementation, including maintaining a focus on project results and impacts as defined by the results framework indicators;
- Coordinate project interventions with other ongoing activities;
- Monitor project progress;
- Be responsible for the elaboration of FAO Project Progress Reports (PPR) and the annual Project Implementation Review (PIR); and
- Facilitate and support the mid-term evaluation/review and final evaluation of the project.

4.3 RISK MANAGEMENT

189. A risk assessment was undertaken during project preparation, in consultation with stakeholders and beneficiaries. The following risks have been documented, which will be monitored throughout project implementation:

4.3.1 Significant risks faced by the project

190. There were no significant risks identified that would prevent the project from achieving its targets. The table below summarizes the risk assessment for the project. Please refer to Annex 4 for further detail on identification, impact, likelihood and mitigating action for each risk.

Risk	Overall ranking	Mitigation Strategy
Weak capacity of government institutions to support the project	Amber	The project will mitigate this risk by emphasizing on a participative approach, making sure that there is a national ownership of the project objectives and activities. Furthermore, government officials will take part of the preparation stage of the project as well as being part the governance and implementation process, which should strengthen ownership of the project, thus ensuring its success. Finally, training and capacity building will also be provided under Components 1, 2, and 3 which will build capacity of government institutions.
Lack of interest from the local communities to explore alternative supply chains	Green	Training and support will be provided to targeted communities so that they can fully grasp the extent of benefits associated with a reduced natural resources degradation and the enabling of an ecosystem-based approach (Component 1). In addition, under Component 3, local communities will be actively engaged in selection of alternative supply chains.
Lack of interest from the local communities to take up cultivation of endemic, resilient and threatened crops	Green	The crops to be promoted by the project will be selected in consultation with local populations to ensure their ownership of this activity (4.1)
Tools and methodologies developed fail to reach intended users	Green	Training will be provided to the appropriate end-users for the use of the tools and methods to be developed – i.e. monitoring platform under Component 1, restoration techniques under Component 2 and agropastoral techniques under Component 3.
Climate change including long drought periods prevent the interventions from being successful in the long term	Amber	Observed climate changes and future climate scenarios will be taken into account when designing the project activities and integrated in the management plan. Climate change will also be considered when identifying livelihood opportunities (selecting species to be promoted/commercialised).
Sub-contractors fail to deliver on terms of their contracts	Green	Service providers will be selected following thorough due diligence and detailed contracts will be drawn, making payments conditional on deliverables

4.3.2 Environmental and social risks (posed by the project)

191. The project preparation phase did not identify any environmental impacts from the project, but rather environmental benefits are expected throughout. The economic and social impacts of the project are also expected to be positive.

192. Refer to Table B of Annex 4 for identification and mitigation of environmental and social risks.

4.4. FINANCIAL MANAGEMENT

4.4.1 Financial planning

GEF inputs: USD 8 222 505
Co-financing amounts to USD 22 140 876

Component	GEF	MoA Grant	MoA In-Kind	MHWS Grant	MoL Grant	MoE Grant	MoE In-Kind	Tadamoun	FAO Grant	GoM Cash	Total Cofinancing	Total financing	% contribution GEF
1	$353,300	$ -	$ -	$ 100,000	$ -	$ 250,000	$ 200,000	$ -	$ -	$ 1,000,000	$ 1,550,000	**$1,903,300**	**19%**
2	$4,970,625	$ 1,500,000	$ 200,000	$ 4,900,000	$ 1,500,000	$ 2,000,000	$ 500,000	$ 500,000	$ -	$ -	$11,100,000	**$16,070,625**	**31%**
3	$2,093,582	$ 1,500,000	$ 200,000	$ -	$ 2,050,000	$ 350,000	$ -	$ 2,800,000	$ -	$ -	$ 6,900,000	**$8,993,582**	**23%**
4	$413,450	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ -	$ 800,000	**$1,213,450**	**34%**
PMC	$391,548	$ -	$ 300,000	$ -	$ 450,000	$ -	$ 100,000	$ -	$ 550,000	$ 390,876	$ 1,790,876	**$2,182,424**	**18%**
TOTAL	$8,222,505	$ 3,000,000	$ 1,000,000	$ 5,000,000	$ 4,000,000	$ 2,600,000	$ 800,000	$ 3,300,000	$ 1,050,000	$ 1,390,876	$22,140,876	**$30,363,381**	**27%**

Please, note the difference between the co-financing amount reported in this table and the amount stated in the co-financing letter from the Ministry of Agriculture. In the co-financing letter, the project PASK II – Poverty Reduction Project in Aftout South and Karakoro, phase II – is a LDCF and IFAD financed project and can therefore not be featured as co-financing. As a result, the amount stated in the co-financing letter (USD 5 M) has been reduced by USD1 M, the amount originally estimated as co-financing from the PASK II project.

Partner	Nature	Amount	Source	Use
Government of Mauritania	Cash	1,390,876	National Budget	- Delegation of regional staff to participate in project; - Coordination of project through Ministry of Environment - Contribution to organization of project steering committees - Support to land use planning (1.2)
Ministry of Livestock	Grant	4,000,000	National Budgets	- Support to acquisition and dissemination of small livestock, including training and capacity building and related equipment - Support to livestock management through veterinary services and - Development and monitoring of livestock policies, including livestock code.
Ministry of Agriculture	In-kind	1,000,000	Project budgets for PGIRE, ProDEFIS, PATA and P2RS	- Salaries of regional staff participating in project; - Technical advice on agriculture and crop management and value chain development (Outcome 3) - Participation to knowledge management through extension services (activity 5.1)
	Grant	3,000,000	MoA regular core budget and project budgets for PGIRE, ProDEFIS, PATA and P2RS	- Baseline support to the acquisition and transfer of agricultural assets and basic production capacity under activity 4.1.2 (Outcome 3)
Ministry of Water and Sanitation	Grant	5,000,000	National Integrated Rural Services Program (PNISER)	- Support to land use plans for water bodies and irrigation planning (1.1) - Support to the development and creation of water mobilization infrastructure, ponds, wells and irrigation systems (3.1)
Ministry of Environment and Sustainable Development – National Great Green Wall Agency	Grant	2,600,000	Great Green Wall Program	- Contribution to the creation, operation and maintenance of environmental monitoring platform (1.1), - Baseline investment cost support to the deployment of reforestation and afforestation (2.1)
	In-kind	800,000	National Budget	- Contribution in staff time, travel costs, overhead costs to project management - Technical and planning support (staff time) for reforestation and afforestation works, forest management and nature reserve management (3.2, 2.1), land use planning (1.2) and environmental monitoring (1.1)
Tadamoun Agency	Grant	3,000,000	From project Takafoul	Grant support to communities for income generating activities and poverty reduction in support of outputs 2.2 and 4.1.
FAO	In-Kind	1,050,000	From FAO budget	Support in the form of technical expertise for application of land tenure guidelines, land use planning, forest planning and management, and biosphere reserve. Technical advice on agro-biodiversity management and linkages to FAO platforms and databases.

4.4.2 Financial management and reporting

193. Financial Records. FAO shall maintain a separate account in United States dollars for the project's GEF resources showing all income and expenditures. Expenditures incurred in a currency other than United States dollars shall be converted into United States dollars at the United Nations operational rate of exchange on the date of the transaction. FAO shall administer the project in accordance with its regulations, rules and directives.

194. Financial Reports. The BH shall prepare six-monthly project expenditure accounts and final accounts for the project, showing amount budgeted for the year, amount expended since the beginning of the year, and separately, the un-liquidated obligations as follows:

- Details of project expenditures on a component-by-component and output-by-output basis, reported in line with project budget codes as set out in the project document, as at 30 June and 31 December each year.
- Final accounts on completion of the project on a component-by-component and output-by-output basis, reported in line with project budget codes as set out in the project document.
- A final statement of account in line with FAO Oracle project budget codes, reflecting actual final expenditures under the project, when all obligations have been liquidated.

195. The BH will submit the above financial reports for review and monitoring by the LTO and the FAO GEF Coordination Unit. Financial reports for submission to the donor (GEF) will be prepared in accordance with the provisions in the GEF Financial Procedures Agreement and submitted by the FAO Finance Division.

196. Budget Revisions. Semi-annual budget revisions will be prepared by the BH in accordance with FAO standard guidelines and procedures.

197. Responsibility for Cost Overruns. The BH is authorized to enter into commitments or incur expenditures up to a maximum of 20 percent over and above the annual amount foreseen in the project budget under any budget sub-line provided the total cost of the annual budget is not exceeded.

198. Any cost overrun (expenditure in excess of the budgeted amount) on a specific budget sub-line over and above the 20 percent flexibility should be discussed with the GEF Coordination Unit with a view to ascertaining whether it will involve a major change in project scope or design. If it is deemed to be a minor change, the BH shall prepare a budget revision in accordance with FAO standard procedures. If it involves a major change in the project's objectives or scope, a budget revision and justification should be prepared by the BH for discussion with the GEF Secretariat.

199. Savings in one budget sub-line may not be applied to overruns of more than 20 percent in other sub-lines even if the total cost remains unchanged, unless this is specifically authorized by the GEF Coordination Unit upon presentation of the request. In such a case, a revision to the project document amending the budget will be prepared by the BH.

200. Under no circumstances can expenditures exceed the approved total project budget or be approved beyond the NTE date of the project. Any over-expenditure is the responsibility of the BH.

201. Audit. The project shall be subject to the internal and external auditing procedures provided for in FAO financial regulations, rules and directives and in keeping with the Financial Procedures Agreement between the GEF Trustee and FAO.

202. The audit regime at FAO consists of an external audit provided by the Auditor-General (or persons exercising an equivalent function) of a member nation appointed by the Governing Bodies of the Organization and reporting directly to them, and an internal audit function headed by the FAO Inspector-General who reports directly to the Director-General. This function operates as an integral part of the Organization under policies established by senior management, and furthermore has a reporting line to the governing bodies. Both functions are required under the Basic Texts of FAO which establish a framework for the terms of reference of each. Internal audits of imprest accounts, records, bank reconciliation and asset verification take place at FAO field and liaison offices on a cyclical basis.

203. Procurement. Careful procurement planning is necessary for securing goods, services and works in a timely manner, on a "Best Value for Money" basis. It requires analysis of needs and constraints, including forecast of the reasonable timeframe required to execute the procurement process. Procurement and delivery of inputs in technical cooperation projects will follow FAO's rules and regulations for the procurement of supplies, equipment and services (i.e. Manual Sections 502 and 507). Manual Section 502: "Procurement of Goods, Works and Services" establishes the principles and procedures that apply to procurement of all goods, works and services on behalf of the Organization, in all offices and in all locations, with the exception of the procurement actions described in Procurement Not Governed by Manual Section 502. Manual Section 507 establishes the principles and rules that govern the use of Letters of Agreement (LoA) by FAO for the timely acquisition of services from eligible entities in a transparent and impartial manner, taking into consideration economy and efficiency to achieve an optimum combination of expected whole life costs and benefits.

204. As per the guidance in FAO's Project Cycle Guide, the BH will draw up an annual procurement plan for major items, which will be the basis of requests for procurement actions during implementation. The first procurement plan will be prepared at the time of project start-up, if not sooner, in close consultation with the CTA/NPC and LTU. The plan will include a description of the goods, works, or services to be procured, estimated budget and source of funding, schedule of procurement activities and proposed method of procurement. In situations where exact information is not yet available, the procurement plan should at least contain reasonable projections that will be corrected as information becomes available.

205. The procurement plan shall be updated every 12 months and submitted to FAO BH and LTO for clearance, together with the AWP/B and annual financial statement of expenditures report for the next instalment of funds.

206. The BH, in close collaboration with the CTA/NPC, the LTO and the Budget and Operations Officer will procure the equipment and services provided for in the detailed budget in Appendix 3, in line with the AWO and Budget and in accordance with FAO's rules and regulations.

SECTION 5 – MONITORING, REPORTING AND EVALUATION

5.1. OVERSIGHT

207. Project oversight will be carried out by the Project Steering Committee (PSC), the FAO GEF Coordination Unit and relevant Technical Units in HQ. Oversight will ensure that: (i) project outputs are produced in accordance with the project results framework and leading to the achievement of project outcomes; (ii) project outcomes are leading to the achievement of the project objective; (iii) risks are continuously identified and monitored and appropriate mitigation strategies are applied; and (iv) agreed project global environmental benefits/adaptation benefits are being delivered.

208. The FAO GEF Unit and HQ Technical Units will provide oversight of GEF financed activities, outputs and outcomes largely through the annual Project Implementation Reports (PIRs), periodic backstopping and supervision missions.

5.2 MONITORING

209. Project monitoring will be carried out by the Project Management Unit (PMU) and the FAO budget holder. Project performance will be monitored using the project results matrix, including indicators (baseline and targets) and annual work plans and budgets. At inception the results matrix will be reviewed to finalize identification of: i) outputs ii) indicators; and iii) missing baseline information and targets. A detailed M&E plan, which builds on the results matrix and defines specific requirements for each indicator (data collection methods, frequency, responsibilities for data collection and analysis, etc) will also be developed during project inception by the M&E specialist.

5.3 REPORTING

210. Specific reports that will be prepared under the M&E program are: (i) Project inception report; (ii) Annual Work Plan and Budget (AWP/B); (iii) Project Progress Reports (PPRs); (iv) annual Project Implementation Review (PIR); (v) Technical Reports; (vi) co-financing reports; and (vii) Terminal Report. In addition, assessment of the GEF Monitoring Evaluation Tracking Tools against the baseline (completed during project preparation) will be required at midterm and final project evaluation.

211. Project Inception Report. It is recommended that the PMU prepare a draft project inception report in consultation with the LTO, BH and other project partners. Elements of this report should be discussed during the Project Inception Workshop and the report subsequently finalized. The report will include a narrative on the institutional roles and responsibilities and coordinating action of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include a detailed first year AWP/B, a detailed project monitoring plan. The draft inception report will be circulated to the PSC for review and comments before its finalization, no later than one month after project start-up. The report should be cleared by the FAO BH, LTO and the FAO GEF Coordination Unit and uploaded in FPMIS by the BH.

212. Results-based Annual Work Plan and Budget (AWP/B). The draft of the first AWP/B will be prepared by the PMU in consultation with the FAO Project Task Force and reviewed at the project Inception Workshop. The Inception Workshop (IW) inputs will be incorporated and the PMU will submit a final draft AWP/B within two weeks of the IW to the BH. For subsequent AWP/B, the PMU will organize a project progress review and planning meeting for its review. Once comments have been incorporated, the BH will circulate the AWP/B to the LTO and the GEF Coordination Unit for comments/clearance prior to uploading in FPMIS by the BH. The AWP/B must be linked to the project's Results Framework indicators so that the

project's work is contributing to the achievement of the indicators. The AWP/B should include detailed activities to be implemented to achieve the project outputs and output targets and divided into monthly timeframes and targets and milestone dates for output indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The AWP/B should be approved by the Project Steering Committee and uploaded on the FPMIS by the BH.

213. Project Progress Reports (PPR): PPRs will be prepared by the PMU based on the systematic monitoring of output and outcome indicators identified in the project's Results Framework (Annex 1). The purpose of the PPR is to identify constraints, problems or bottlenecks that impede timely implementation and to take appropriate remedial action in a timely manner. They will also report on projects risks and implementation of the risk mitigation plan. The Budget Holder has the responsibility to coordinate the preparation and finalization of the PPR, in consultation with the PMU, LTO and the FLO. After LTO, BH and FLO clearance, the FLO will ensure that project progress reports are uploaded in FPMIS in a timely manner.

214. Annual Project Implementation Review (PIR): The BH (in collaboration with the PMU and the LTO) will prepare an annual PIR covering the period July (the previous year) through June (current year) to be submitted to the TCI GEF Funding Liaison Officer (FLO) for review and approval no later than (check each year with GEF Unit but roughly end June/early July each year). The FAO GEF Coordination Unit will submit the PIR to the GEF Secretariat and GEF Evaluation Office as part of the Annual Monitoring Review report of the FAO-GEF portfolio. PIRs will be uploaded on the FPMIS by the TCI GEF Coordination Unit.

215. Key milestones for the PIR process:

A. **Early July**: the LTOs submit the draft PIRs (after consultations with BHs, project teams) to the GEF Coordination Unit (faogef@fao.org , copying respective GEF Unit officer) for initial review;
B. **Mid July**: GEF Unit responsible officers review main elements of PIR and discuss with LTO as required;
C. **Early/mid-August**: GEF Coordination Unit prepares and finalizes the FAO Summary Tables and sends to the GEF Secretariat by (date is communicated each year by the GEF Secretariat through the FAO GEF Unit;
D. **September/October**: PIRs are finalized. PIRs carefully and thoroughly reviewed by the GEF Coordination Unit and discussed with the LTOs for final review and clearance;
E. **Mid November 2023:** (date to be confirmed by the GEF): the GEF Coordination Unit submits the final PIR reports -cleared by the LTU and approved by the GEF Unit- to the GEF Secretariat and the GEF Independent Evaluation Office.

216. Technical Reports: Technical reports will be prepared by national, international consultants (partner organizations under LOAs) as part of project outputs and to document and share project outcomes and lessons learned. The drafts of any technical reports must be submitted by the PMU to the BH who will share it with the LTO. The LTO will be responsible for ensuring appropriate technical review and clearance of said report. The BH will upload the final cleared reports onto the FPMIS. Copies of the technical reports will be distributed to project partners and the Project Steering Committee as appropriate.

217. Co-financing Reports: The BH, with support from the PMU, will be responsible for collecting the required information and reporting on co-financing as indicated in the Project Document/CEO Request. The PMU will compile the information received from the executing partners and transmit it in a timely manner to the LTO and BH. The report, which covers the period 1 July through 30 June, is to be submitted on or before 31 July and will be incorporated into the annual PIR. The format and tables to report on co-financing can be found in the PIR.

218. GEF Tracking Tools: Following the GEF policies and procedures, the relevant tracking tools for full sized projects will be submitted at three moments: (i) with the project document at CEO endorsement; (ii) at the project's mid-term review/evaluation; and (iii) with the project's terminal evaluation or final completion report. The TT will be uploaded in FPMIS by the GEF Unit. The TT are developed by the Project Design Specialist, in close collaboration with the FAO Project Task Force. They are filled in by the PMU and made available for the mid-term review an again for the final evaluation.

219. Terminal Report: Within two months before the end date of the project, and one month before the Final Evaluation, the PMU will submit to the BH and LTO a draft Terminal Report. The main purpose of the Terminal Report is to give guidance at ministerial or senior government level on the policy decisions required for the follow-up of the project, and to provide the donor with information on how the funds were utilized. The Terminal Report is accordingly a concise account of the main products, results, conclusions and recommendations of the project, without unnecessary background, narrative or technical details. The target readership consists of persons who are not necessarily technical specialists but who need to understand the policy implications of technical findings and needs for insuring sustainability of project results.

5.4 EVALUATION

220. A Mid-Term Review will be undertaken at project mid-term to review progress and effectiveness of implementation in terms of achieving the project objectives, outcomes and outputs. Findings and recommendations of this review will be instrumental for bringing improvement in the overall project design and execution strategy for the remaining period of the project's term. FAO will arrange for the mid-term review in consultation with the project partners. The review will, *inter alia*:

(i) review the effectiveness, efficiency and timeliness of project implementation;
(ii) analyze effectiveness of partnership arrangements;
(iii) identify issues requiring decisions and remedial actions;
(iv) propose any mid-course corrections and/or adjustments to the implementation strategy as necessary; and
(v) highlight technical achievements and lessons learned derived from project design, implementation and management.

221. An independent Final Evaluation (FE) be carried out three months prior to the terminal review meeting of the project partners. The FE will aim to identify the project impacts and sustainability of project results and the degree of achievement of long-term results. This evaluation will also have the purpose of indicating future actions needed to sustain project results and disseminate products and best-practices within the country and to neighbouring countries.

5.5 M&E PLAN

Type of M&E Activity	Responsible Parties	Time-frame	Budget (excluding project staff time)
Inception Workshop	FAO Country Office	Within two months of project document signature	10 000
Project Inception Report	Project Manager	Within two weeks of inception workshop	None
Supervision visits	FAO country office	Annually	None
Project Progress Reports (PPR)	Project manager and M&E officer	Annually	None
Project Implementation Review report (PIR)	Project manager	Annually (July)	None
Co-financing Reports	FAO Country office	Annually	None
Mid-term Review	FAO Country Office	Year 3	40 000
Final evaluation	FAO Country office	At least three months before operational closure	50 000 (coordinated by OED)
Terminal Report	Project Manager	Within two months of project closure	None
Total Budget			100 000

5.6 COMMUNICATION

223. The project will ensure information is conveyed to the stakeholders via the land use planning exercise (Activity 1.2) that will take place in the first year of the project. This exercise will ensure that Free, Prior and Informed Consent to the project's activities is obtained from all stakeholders, including the most vulnerable groups.

224. The monitoring platform created under Activity 1.1 will ensure that the project's impacts is well recorded and the associated capacity development activities will have high visibility at the wilaya and commune level. In addition, the public awareness raising campaigns to promote the biogas digesters and improved cook stoves (Activity 2.2) will also enhance the visibility of the project. The creation of the biosphere reserve (Activity 1.3) will also entail wide stakeholder consultation and communication activities which will increase the project's visibility.

225. Subsequently, the project's Component 4 – Knowledge Management – will contribute to communication and visibility by ensuring that the results, lessons learned and best practices are broadly disseminated, through the generation of both web and print material. This will include dissemination of the Final Report, as well as mid-term and final evaluation reports.

ANNEXES

ANNEX 1 RESULTS MATRIX

Results Chain	Indicators	Baseline	Mid-term milestone	Target	Means of Verification (MOV)	Assumptions
Development objective: sustainably improve the livelihoods, and the natural resource base upon which rural communities depend, in Southern Mauritania.						
Project Objective[1]: Increase sustainable human development through the restoration of ecosystem services and an integrated ecosystem management approach in three Southern Mauritania landscapes.						
Component 1[2]: Integrated and participatory planning for the sustainable development of ecosystems						
Outcome 1. The use of land and natural resources is informed and governed by an integrated, participatory and gender sensitive approach.	The extent to which dynamic agro-biodiversity, biodiversity, forest, soil, water conservation and climate change are integrated into community driven land use plans in each of the project's three landscapes and based on a participatory and gender sensitive approaches	While land use plans already exist, they are not integrated, concentrate on economic development without taking into account environmental issues, and are not sensitive to gender. In addition, the majority of land use plans are based on inadequate information and are not applied.	3 integrated, gender-sensitive land use plans, based on recent data on agro-biodiversity, biodiversity, soils, water, and and climate change, based on a consensus amongst land users, are adopted and utilised by mid-project	3 integrated, gender-sensitive land use plans, based on recent data on agro-biodiversity, biodiversity, soils, water, and and climate change, based on a consensus amongst land users, are adopted, utilised and updated.	Project report and land use plans	Local government and community members participate and implement territorial land use plans. Ressources are available in years to come to integrate the data in an iterative cycle.
Output 1.1 A platform to monitor ecological and socio-economic indicators is created and serves as a basis for the land use planning Output 1.2 An integrated, participatory and gender-sensitive land use plan for each project landscape is established, on the basis of a consensus amongst diverse land users Output 1.3 One new terrestrial protected area is formally established and integrated into the concerned landscape's land use plan						

[1] The **Project objective** is the medium-term result we want to achieve by the end of the project. What change do we reasonably expect we can achieve by the end of the project, if the component outcomes are achieved? Note: the project objective is not a simple aggregation or reformulation of the Component Outcomes.

[2] Define one or two outcomes per component.

Component 2: Conservation, restoration and sustainable management of the landscape / ecosystem.						
Outcome 2: Land degradation is reduced, habitats are rehabilitated, and vegetation cover and soil carbon sinks are restored through a participatory and integrated ecosystem approach	# hectares under sustainable management # tons of $CO_{2\ eq}$ sequestered or avoided			160 355 hectares 4 751 979 tCO_{2eq} sequestered or avoided	Activity reports and field verifications	Economic viability & technical feasibility
Output 2.1. Land degradation is reduced and vegetation cover is restored Output 2.2. Alternative or sustainable sources of energy promoted to reduce pressures on forests and biomass						
Outcome 3.Sustainable use and management of water reserves for increased water availability during dry spells	Number of people who have access to water during dry periods, disaggregated by sex.	t.b.d	20% increase (50% women)	50% increase (50% women)	Activity reports and household surveys	Technical feasibility and rainfall
Output 3.1. Water storage and mobilisation infrastructure are built and managed in a participatory manner						
Component 3. Reduction of pressure on ecosystems through income generation and funding mechanisms						
Outcome 4: Increased, diversified and stable sources of income for the local population through more sustainable exploitation of natural resources	Number of people benefiting from increased revenue sources (from improved productivity and diversified income sources), disaggregated by sex.	t.b.c.	2 000 people (50% women)	10 000 people (50% women)	Household surveys	Farmers and pastoralists, and their organizations, have better market access and benefit from improved practices and varieties
Output 4.1. Training, technical assistance and knowledge exchange catalyzed via farmer field school approaches for agro-pastoralists in pilot areas. Output 4.2 Producer groups established and supported, building biodiversity-friendly value chains and enhanced market access, for alternative income sources						

Component 4. Knowledge management	
Outcome 5: Local and national decision-makers and authorities have an improved knowledge on development and environmental issues on which they are able to base land use planning and natural resources management decisions	The project has led to better practices and lessons learned. The platform is useful for decision-making by national and local authorities.
Output 5.1. The project's results and lessons are identified, documented, and reported upon in a timely manner	

ANNEX 2 WORKPLAN

Components/Outcomes/Outputs/Activities	Y1	Y2	Y3	Y4	Y5
Component 1. Integrated and participatory planning for the sustainable development of ecosystems					
Outcome 1. The use of land and natural resources is informed and governed by an integrated, participatory and gender sensitive approach.					
Produit 1.1. A platform to monitor ecological and socio-economic indicators is created and serves as a basis for the land use planning					
1.1.1 Define ecological indicators in a participatory manner with governments, local communities and authorities					
1.1.2 Establish baseline assessment for all selected					
1.1.3 Operationalize the platform, including web tools and modalities for access					
1.1.4 Train users, operators, and data providers					
Output 1.2. An integrated, participatory and gender-sensitive land use plan for each project landscape is established, on the basis of a consensus amongst diverse land users					
1.2.1. Map the ecosystems, land uses and users in the three landscapes					
1.2.2 Elaborate and validate the land use plans in a participatory manner					
1.2.3 Validate the land use plans in a participatory manner					
1.2.4 Annually update land use plans according to the monitoring platform					
Output 1.3. One new terrestrial protected area is formally established and integrated into the concerned landscape's land use plan					
1.3.1 Awareness raising and consultation workshops towards mapping and designation of biosphere reserve in El Atf					
1.3.2 Mapping and information gathering to support application to UNESCO					
1.3.3 Formal designation, ratification, and development of management plans					
Component 2. Conservation, restoration and sustainable management of the landscape / ecosystem.					
Outcome 2. Land degradation is reduced, habitats are rehabilitated, and vegetation cover and soil carbon sinks are restored through a participatory and integrated ecosystem approach					
Output 2.1 Land degradation is reduced and vegetation cover is restored					
2.1.1 Restore 2 semi-protected forests in the intervention zone, through assisted natural regeneration					
2.1.2 Fight against sedimentation by fixing sand dunes					
2.1.3 Establish 500 ha of pasture an estimated 500 ha exclusion zones with high regeneration potential					
2.1.4 Promote afforestation and reforestation in 3,000 hectares					
2.1.5 Fight against bush fires by establishing 500km of fire prevention corridors and through strengthening of 50 committees					
2.1.6 Enforce rules against deforestation by strengthen					

Output 2.2 Alternative or sustainable sources of energy promoted to reduce pressures on forests and biomass					
2.2.1. Awareness campaign to promote improved cookstoves and biogas digesters					
2.2.2 Demonstrate and disseminate technologies for production of biogas, using livestock manure, in areas with high animal density, through support for women producers					
2.2.3 Develop and demonstrate the use of locally appropriate improved cookstoves					
Outcome 3. Sustainable use and management of water reserves for increased water availability during dry spells					
Output 3.1 Water storage and mobilisation infrastructure are built and managed in a participatory manner					
3.1.1. Rehabilitate ponds					
3.1.2. Build water reservoirs and water retention structures					
3.1.3 Build flow control structures					
3.1.4 Promote the use of solar pumps for communal w					
3.1.5 Creation and training of water user committees					
Component 3. Reduction of pressure on ecosystems through income generation and funding mechanisms					
Outcome 4. Increased, diversified and stable sources of income for the local population through more sustainable exploitation of natural resources					
Output 4.1 Training, technical assistance and knowledge exchange catalyzed via farmer field school approaches for agro-pastoralists in pilot areas.					
4.1.1 Professionalization of producers' cooperatives through training and targeted technical support					
4.1.2 Distribution of agricultural assets to support sustainable production and commercialization					
4.1.3 Support, through FFS, to the production and commercialization of indigenous seeds including Oryza glaberrima Steud (rice), Pennisetum glaucum (L.) , niebe, peanuts and bambara pea as well as fodder.					
4.1.4 Training and technical support to small producers and pastoralists to increase agro-sylvo-pastoral productivity through Agro-pastoral and Farmer fields schools, including techniques for water and soil conservation.					
Output 4.2 Producer groups established and supported, building biodiversity-friendly value chains and enhanced market access, for alternative income sources					
4.2.1 Market studies and participatory selection of alternative supply chains					
4.2.2 Training on production, processing and commercialization					
4.2.3 Support to the creation of market linkages					
Component 4. Knowledge Management					
Outcome 5. Local and national decision-makers and authorities have an improved knowledge on development and environmental issues on which they are able to base land use planning and natural resources management decisions					
Output 5.1 The project's results and lessons are identified, documented, and reported upon in a timely manner					
Activity 5.1.1 Household survey to establish/revise baseline values for key indicators and review targets and indicators if necessary					
Activity 5.1.2 Identification, documentation and reporting on project results					
Activity 5.1.3 Issue recommendations to improve natural resources governance and finance their sustainable use					
Activity 5.1.4 Communication of results					

ANNEX 3 BUDGET

					Comp 1	Comp 2		Comp 3	Comp 4		Total	Expenditures by year					
Oracle Code	**Description**	**Unit**	**No. of units**	**Unit cost**	**Outcome 1**	**Outcome 2**	**Outcome 3**	**Outcome 4**	**Outcome 5**	**PM**	**GEF**	**Year 1**	**Year 2**	**Year 3**	**Year4**	**Year 5**	**Total**
5300	HR and procurement officer	Monthly salary	60	3,263						195,774	195,774	39,155	39,155	39,155	39,155	39,155	195,774
5300	Administrative and financial officer	Monthly salary	60	3,263						195,774	195,774	39,155	39,155	39,155	39,155	39,155	195,774
	Sub-total salaries				0	0	0	0	0	391,548	391,548	78,310	78,310	78,310	78,310	78,310	391,548
5570	International consultant - monitoring platform	Daily fee	40	500	20,000						20,000	20,000	0	0	0	0	20,000
5570	International consultant - protected areas	Daily fee	20	500	10,000						10,000	5,000	0	0	5,000	0	10,000
5570	International consultant - supply chains	Daily fee	30	500				15,000			15,000	15,000	0	0	0	0	15,000
5570	International consultant mid-term evaluation	Lump sum	1	40,000					40,000		40,000	0	0	40,000	0	0	40,000
5570	International consultant final evaluation	Lump sum	1	50,000					50,000		50,000	0	0	50,000	0	0	50,000
	Sub-total international consultants				30,000	0	0	15,000	90,000	0	135,000	40,000	0	90,000	5,000	0	135,000
5580	M&E Officer	Monthly salary	36	1,600					57,600		57,600	19,200	0	19,200	0	19,200	57,600
5580	National project coordinator	Monthly salary	60	2,000	24,000	24,000	24,000	24,000	24,000	0	120,000	24,000	24,000	24,000	24,000	24,000	120,000
5580	National consultant - monitoring platform	Monthly fee	12	2,000	24,000						24,000	24,000	0	0	0	0	24,000
5580	National consultants - site coordination	Monthly fee	144	1,400	42,000	70,000	35,000	49,000	5,600		201,600	25,200	50,400	50,400	50,400	25,200	201,600
5580	National consultant - protected areas	Monthly fee	20	2,000	40,000						40,000	10,000	8,000	2,000	20,000	0	40,000
5580	National consultant - land restoration	Monthly fee	38	2,000		76,000					76,000	0	4,000	24,000	24,000	24,000	76,000
5580	National consultant - renewable energy	Monthly fee	6	2,000		12,000					12,000	12,000	0	0	0	0	12,000

5580	National consultant - water infrastructure	Monthly fee	32	2,000			64,000				64,000	0	16,000	16,000	16,000	16,000	64,000
5580	National consultant - agro pastoral field schools	Monthly fee	15	2,000				30,000			30,000	6,000	6,000	6,000	6,000	6,000	30,000
5580	National consultants - supply chains	Monthly fee	12	2,000				24,000			24,000	24,000	0	0	0	0	24,000
	Subtotal national consultants				130,000	182,000	123,000	127,000	87,200	0	649,200	144,400	108,400	141,600	140,400	114,400	649,200
5023	Workshops to define ecological and socio-economic indicators	Workshops	12	1,500	18,000						18,000	18,000	0	0	0	0	18,000
5023	Trainings for users, operators and data providers for platform	Trainings	6	1,500	9,000						9,000	9,000	0	0	0	0	9,000
5023	Workshops to map ecosystems, land uses and land users	Workshops	15	1,500	22,500						22,500	22,500	0	0	0	0	22,500
5023	Workshops to elaborate the land use plans	Workshops	15	1,500	22,500						22,500	22,500	0	0	0	0	22,500
5023	Workshops to validate the land use plans	Workshops	10	1,000	10,000						10,000	10,000	0	0	0	0	10,000
5023	Workshops for annual update of land use plans	Workshops	16	1,500	24,000						24,000	0	3,000	3,000	3,000	15,000	24,000
5023	Protected area awareness raising and information sharing workshops (Nouakchott et El Atf)	Workshops	10	1,500	15,000						15,000	15,000	0	0	0	0	15,000
5023	Workshops with stakeholders to delineate protected area	Workshops	6	1,500	9,000						9,000	0	9,000	0	0	0	9,000
5023	Workshop for development of PA management plans	Workshop	1	5,000	5,000						5,000	0	0	5,000	0	0	5,000
5023	Trainings - assisted natural regeneration	Trainings	5	1,500		8,000					8,000	0	2,000	2,000	2,000	2,000	8,000
5023	Trainings - sand dune fixation	Trainings	5	1,500		8,000					8,000	0	2,000	2,000	2,000	2,000	8,000
5023	Trainings for bush fire fighting committees	Trainings	50	1,000		50,000					50,000	0	25,000	25,000	0	0	50,000
5023	Trainings to rehabilitate fire prevention corridors	Trainings	24	1,000		24,000					24,000	0	6,000	6,000	6,000	6,000	24,000

5023	Trainings for local forest services	Trainings	20	1,500		30,000					30,000	6,000	6,000	6,000	6,000	6,000	30,000
5023	Trainings to build flow control structures	Trainings	4	1,500			6,000				6,000	0	3,000	0	3,000	0	6,000
5023	Trainings for professionalization of producers' cooperatives	Trainings	20	2,500				50,000			50,000	25,000	25,000	0	0	0	50,000
5023	Trainings to use agricultural assets to support sustainable production and targeted technical support	Trainings	30	1,500				30,000			30,000	0	10,000	10,000	10,000	0	30,000
5023	Trainings for extension agro pastoral field schools agents (3 par année/chaque district)	Trainings	15	2,000				30,000			30,000	6,000	6,000	6,000	6,000	6,000	30,000
5023	Agro pastoral field schools (25 producers)	Agro-pastoral field school for 25 producers	400	1,500				600,000			600,000	0	150,000	150,000	150,000	150,000	600,000
5023	Workshops - participatory selection of alternative supply chains	Workshops	4	1,500				6,000			6,000	6,000	0	0	0	0	6,000
5023	Trainings - integration of alternative supply chains	Trainings	16	1,500				24,000			24,000	0	6,000	6,000	6,000	6,000	24,000
5023	Workshops - creation of market linkages	Workshops		2,000				8,000			8,000	0	0	0	4,000	4,000	8,000
5023	PSC Meetings	PSC Meetings	5	6,000					30,000		30,000	6,000	6,000	6,000	6,000	6,000	30,000
5023	Site coordination Committee meetings	Site Coordination Committee meetings	15	2,000					30,000		30,000	6,000	6,000	6,000	6,000	6,000	30,000
	Sub-total Meetings and workshops				135,000	120,000	6,000	748,000	60,000	0	1,069,000	152,000	265,000	233,000	210,000	209,000	1,069,000
5650	Assisted natural regeneration	Hectares	2,300	630		1,449,000					1,449,000	0	362,250	362,250	362,250	362,250	1,449,000
5650	Dune fixation	Hectares	500	1,500		750,000					750,000	0	125,000	125,000	250,000	250,000	750,000

5650	Exclusion zones with high regenration potential	Hectares	500	1,000		500,000					500,000	0	83,333	83,333	166,667	166,667	500,000
5650	Plant commercial tree species	Hectares	500	700		350,000					350,000	0	58,333	116,667	116,667	58,333	350,000
5650	Plant forage	Hectares	300	600		180,000					180,000	0	30,000	90,000	60,000	0	180,000
5650	Plant agro-forestry systems	Hectares	600	600		360,000					360,000	0	90,000	90,000	90,000	90,000	360,000
5650	Plants for woodfuel	Hectares	400	500		200,000					200,000	0	50,000	75,000	75,000	0	200,000
5650	Plant anti-erosion and shade tress	Hectares	1,000	300		300,000					300,000	0	75,000	150,000	75,000	0	300,000
5650	Reforest riverbanks	Hectares	200	600		120,000					120,000	0	0	60,000	42,000	18,000	120,000
5650	Mid term and Terminal review/evaluation	Lump sum	1	90,000					90,000		90,000	0	0	40,000	0	50,000	90,000
5650	Contract - Fire prevention corridor	Km	500	100		50,000					50,000	0	12,500	12,500	12,500	12,500	50,000
5650	Radio and other media for biogas and improved cookstoves awareness campaign	Campaign	6	3,000		18,000					18,000	6,000	3,000	3,000	3,000	3,000	18,000
5650	Printing costs for biogas and improved cookstoves awareness campaign	Printing costs	1	4,000		4,000					4,000	4,000	0	0	0	0	4,000
5650	Supply and disseminate biogas plants	Kit	100	900		90,000					90,000	0	22,500	22,500	22,500	22,500	90,000
5650	Supply and disseminate improved cook stoves	Cookstove + training	5,600	40		224,000					224,000	24,000	50,000	50,000	50,000	50,000	224,000
5650	Rehabilitate ponds	Contract	3	14,000			42,000				42,000	0	14,000	14,000	14,000	0	42,000
5650	Build water reservoirs and water retention	Contract	5	8,000			40,000				40,000	0	16,000	16,000	8,000	0	40,000
5650	Build dikes	Contract	24	2,000			48,000				48,000	0	12,000	12,000	12,000	12,000	48,000
5650	Build flow control structures	Contract	8	15,000			120,000				120,000	0	30,000	30,000	30,000	30,000	120,000
5650	Install solar pumps	Contract	100	1,700			170,000				170,000	0	17,000	51,000	68,000	34,000	170,000
5650	Contract with CNRADA - for the production and commercialization of indigenous seeds	Contract	1	180,000				180,000			180,000	45,000	45,000	45,000	45,000	0	180,000

5650	Printing costs for agro pastoral field schools training materials	Lump sum	1	10,000				10,000			10,000	10,000	0	0	0	0	10,000
5650	Publications (internet and hard copies)	Lump sum	1	35,000					35,000		35,000	0	0	10,000	0	25,000	35,000
	Sub-total contracts				0	4,595,000	420,000	190,000	125,000	0	5,330,000	89,000	1,095,917	1,458,250	1,502,583	1,184,250	5,330,000
5900	Travel costs	Lump sum	1	162,757	37,050	33,000	24,600	38,107	30,000		162,757	32,551	32,551	32,551	32,551	32,551	162,757
	Sub-total travel				37,050	33,000	24,600	38,107	30,000	0	162,757	32,551	32,551	32,551	32,551	32,551	162,757
6100	Vehicles	Vehicle	2	40,000				80,000			80,000	80,000	0	0	0	0	80,000
6100	Equipment - integration of alternative supply chains	Lump sum	1	90,000				90,000			90,000	0	30,000	30,000	30,000	0	90,000
6100	Equipment for local forest services	Lump sum	3	10,000		30,000					30,000	10,000	10,000	10,000	0	0	30,000
6100	Equipment - agricultural assets to support sustainable production and commercialization	Lump sum	1	200,000				200,000			200,000	0	75,000	75,000	50,000	0	200,000
	Sub-total non-expendable procurement				0	30,000	0	370,000	0	0	400,000	90,000	115,000	115,000	80,000	0	400,000
	GOE	Lump sum	1	85,000	21,250	10,625	10,625	21,250	21,250		85,000	17,000	17,000	17,000	17,000	17,000	85,000
	Sub-total GOE				21,250	10,625	10,625	21,250	21,250	0	85,000	17,000	17,000	17,000	17,000	17,000	85,000
	Total				353,300	4,970,625	584,225	1,509,357	413,450	391,548	8,222,505	643,261	1,712,178	2,165,711	2,065,844	1,635,511	8,222,505

SUBTOTAL Outcome 1	**353,300**
SUBTOTAL Outcome 2	**4,970,625**
SUBTOTAL Outcome 3	**584,225**
SUBTOTAL Outcome 4	**1,509,357**
SUBTOTAL Outcome 5	**413,450**
SUBTOTAL PM	**391,548**
TOTAL GEF	**8,222,505**

ANNEX 4 THE PROJECT RISK LOG

1. **Risks**

Risk No.	Risk statement	Impact (effect on project - H, MH, ML, or L)	Likelihood (H, MH, ML, or L)	Overall ranking (Red/Amber /Green)	Mitigating action	Action owner
1	Weak capacity of government institutions to support the project	MH	ML	Amber	The project will mitigate this risk by emphasizing on a participative approach, making sure that there is a national ownership of the project objectives and activities. Furthermore, government officials will take part of the preparation stage of the project as well as being part the governance and implementation process, which should strengthen ownership of the project, thus ensuring its success. Finally, training and capacity building will also be provided under Components 1, 2, and 3 which will build capacity of government institutions.	FAO
2	Lack of interest from the local communities to explore alternative supply chains	MH	L	Green	Training and support will be provided to targeted communities so that they can fully grasp the extent of benefits associated with a reduced natural resources degradation and the enabling of an ecosystem-based approach (Component 1). In addition, under Component 3, local communities will be actively engaged in selection of alternative supply chains.	FAO
3	Lack of interest from the local communities to take up cultivation of endemic, resilient and threatened crops	ML	L	Green	The crops to be promoted by the project will be selected in consultation with local populations to ensure their ownership of this activity (4.1).	FAO
4	Tools and methodologies (components 1 and 3) developed fail to reach intended users	MH	L	Green	Training will be provided to the appropriate end-users for the use of the tools and methods to be developed – i.e. monitoring platform under Component 1, restoration techniques under Component 2 and agropastoral techniques under Component 3.	FAO
5	Sub-contractors fail to deliver on terms of their contracts	MH	L	Green	Service providers will be selected following thorough due diligence and detailed contracts will be drawn, making payments conditional on deliverables.	FAO

2. **Environmental and Social risks**

ESS Standard	Risk Description	Mitigation hierarchy	Mitigation action	Responsible	Timeframe	Indicator
ESS 2	Access and benefit sharing for genetic resources	Moderate	All issues mentioned in Annex 5 below will be considered and appropriate action taken, and in particular for the plant genetic resources for food and agriculture and traditional knowledge associated with genetic resources.	FAO MAU	During project implementation	Progress reports
ESS 3	Provision of seeds and planting materials	Moderate	Water lilies tubers and seeds will be brought from the Senegal River Valley and used to sow ponds that have been rehabilitated. Water lilies are natives of ponds and lakes in the project area, but in recent years their number has greatly diminished due to drought and sedimentation. So, they will be transferred from the Senegal River Valley. All mitigation actions listed in the risk log will be respected.	FAO MAU	During project implementation	Progress reports
ESS 7	Decent work	Moderate	See signed risk classification form (Annex 5) for the mitigation actions taken in the potential case of: - Working with subsistence producers and vulnerable groups; - Youth employment; - Gender inequalities at the workplace; and - Direct employment of workers.	FAO MAU	During project implementation	Progress reports

ANNEX 5 RISK CLASSIFICATION CERTIFICATION FORM

See separate document

ANNEX 6 TERMS OF REFERENCE OF PROJECT MANAGEMENT UNIT STAFF

The PMU will consist of one National Project Manager (PM), one Chief Technical Advisor (CTA), one M&E expert, and one Finance and Admin Manager. The PMU will be supported by national and international consultants as needed.

Detailed TOR for each of these will be prepared prior to the Inception Workshop, approved by the PSC.

Project Manager (PM)
Reports to: Project Steering Committee
Duration: This is a full-time position for the 5 years of the project.

The project manager (PM) will be a national expert. Tasks will include but are not limited to:

- Assumes operational management of the project in consistency with the project document and FAO policies and procedures for nationally executed projects;
- Oversees preparation and updates of the project work plan as required; and formally submits updates to FAO and reports on work plan progress to the PB and FAO as requested but at least quarterly;
- Oversees the mobilization of project inputs under the responsibility of the Executing Agency;
- Oversees the recruitment of all consultants and sub-contractors;
- Ensures that appropriate accounting records are kept, and facilitates and cooperates with audit processes at all times as required;
- Ensures all reports are prepared in a timely manner;
- Assists in the finalization of TORs and the identification and selection of national consultants to undertake the rapid assessment;
- Assists in the planning and design of all project activities, through the quarterly planning process and the preparations of TOR and Activity Descriptions;
- Supervises the project staff and consultants assigned to project;
- Throughout the project, when necessary, provides advice and guidance to the national consultants, to the international experts and to project partners; and
- Assists in the dissemination of project findings, notably to relevant governmental departments and internationally.
- Contribute to communication activities
- Builds working relationships with national and international partners in this sector;
- Ensures the coordination of project activities work with related work of partners.

Monitoring and Evaluation Expert
Reports to: Project Manager
Duration: This is a full-time position for the 5 years of the project.

The M&E Expert will be a national expert. Tasks will include but are not limited to:

- Provide technical expertise and guidance to all project components, and support the CTA in the coordination of the implementation of planned activities under the project as stipulated in the project document/work plan;
- Be specifically responsible for the technical input into the development of a M&E framework and its implementation and follow-up with all relevant stakeholders at national, county and demonstration site level, in line with the project results framework in section III of the project document and in line with the GEF tracking tools;
- Ensure that technical contracts meet the highest standards; provide input into development of Terms of Reference for sub-contracts, assist with selection process, recommend best candidates and approaches, provide technical peer function to sub-contractors; provide training and backstopping were necessary;

- Provide technical inputs into the work of the Project Steering Committee, and other relevant institutions implicated in the project management and implementation arrangements; and
- Contribute to reporting on project's successes, progress and lessons learned including through developing reports
- Undertake regular reporting in line with project management guidelines.

The **Administrative and Financial Officer**
Reports to: Project Manager
Duration: This is a full-time position for the 5 years of the project.

The officer will be a national expert. Tasks include but are not limited to:

- Ensure smooth and timely implementation of project activities in support of the results-based workplan, through operational and administrative procedures according to FAO rules and standards;
- Coordinate the project operational arrangements through contractual agreements with key project partners;
- Arrange the operations needed for signing and executing Letters of Agreement (LoA) and Government Cooperation Programme (GCP) agreement with relevant project partners;
- Maintain inter-departmental linkages with FAO units for donor liaison, Finance, Human Resources, and other units as required;
- Day-to-day manage the project budget, including the monitoring of cash availability, budget preparation and budget revisions to be reviewed by the Project Coordinator;
- Ensure the accurate recording of all data relevant for operational, financial and results-based monitoring;
- Ensure that relevant reports on expenditures, forecasts, progress against workplans, project closure, are prepared and submitted in accordance with FAO and GEF defined procedures and reporting formats, schedules and communications channels, as required;
- Execute accurate and timely actions on all operational requirements for personnel-related matters, equipment and material procurement, and field disbursements;
- Participate and represent the project in collaborative meetings with project partners and the Project Steering Committee, as required;
- Undertake missions to monitor the outputs-based budget, and to resolve outstanding operational problems, as appropriate;
- Be responsible for results achieved within her/his area of work and ensure issues affecting project delivery and success are brought to the attention of higher level authorities through the BH in a timely manner,
- In consultation with the FAO Evaluation Office, the LTO, and the FAO-GEF Coordination Unit, support the organization of the mid-term and final evaluations, and provide inputs regarding project budgetary matters; and
- Provide inputs and maintain the FPMIS systems up-to-date.

The **HR and Procurement Officer**
Reports to: Project Manager
Duration: This is a full-time position for the 5 years of the project.

The officer will be a national expert. Tasks include but are not limited to:

- Consults with technical team, Budget Holder and project management on specific HR and procurement requests, issues, and problems, and provides advice, policy interpretations, and options on how to proceed;
- Supervise the procurement of goods and contracting of services in close collaboration with the Budget Holder and the Project Coordinator and in accordance with the technical supervision of LTO, FAO rules and procedures and the AWP/B approved by the Project Steering Committee;
- Oversee timely planning and implementation of procurement plans providing advice as needed on most appropriate procurement actions;
- Reviews project service and staffing delivery and procedures, develop proposals, and coordinate

updates/revisions;

- Monitors requests for human resources actions and determines/approves, within delegated authority, salary, entitlements, travel, social security and other benefits.
- Liaises with HR Officer/s in Shared Services Center (SSC), Budapest, RNE and HQ to provide and obtain guidance on technical aspects and keep abreast of the different HR initiatives and policies and maintains leading edge knowledge on human resources issues.

National consultants (3) - site coordinator
There will be one site coordinator for each landscape (total of 3). They will be contracted for the total duration of the project (48 months).
Their tasks will be to :

- conduct a baseline survey (activity 5.1.1.)
- train stakeholders to feed, access and interpret data into monitoring platform (1.2.4)
- map the three landscapes, different land uses and land users (activity 1.2.1)
- elaborate in a participatory manner the land use plans (activity 1.2.2) (v) validate the land use plans by organizing a workshop in the landscape (activity 1.2.3)
- annually update the land use plans (activity 1.2.3)
- train stakeholders to access and feed data into monitoring platform (1.2.4)
- train people to do dune fixation (activity 2.1.2)
- train people to do exclusion zones (activity 2.1.3)
- train producer coops (activity 4.1.1.)
- oversee purchase of agricultural tools and machinery (activity 4.1.2)
- training and support producer groups to access alternative supply chains (activity 4.2.2)
- support producers to access markets (activity 4.2.3)
- help with the final evaluation of the project (activity 5.1.2)

National consultant - monitoring platform
The consultant will be hired for 12 months in Y1.
The consultant's mandate will be to:

- define the socio-economic and ecological indicators in consultation with stakeholders (activity 1.1.1)
- establish the baseline for all indicators in the three landscapes (activity 1.1.2)
- create the monitoring platform (activity 1.1.3)

International consultant – monitoring platform
The international consultant will be hired for two months in Y1 to support the national consultant, FAO team and MEDD in the creation of the monitoring platform. (Activity 1.1.3).

National consultant- land restoration
The consultant will be hired for 2 months in the Y1 and then 12 months a year Y2-Y5.
The consultant's mandate will be to :

- conduct trainings and oversee contract for ANR of 2,355 hectares in semi protected areas in El Atf (Activity 2.1.1)
- help target populations and authorities identify areas that would most benefit from dune fixation, conduct trainings and oversee contract for dune fixation (Activity 2.1.2)
- help target populations and authroities identify areas that would most benefit from exclusion zones , conduct trainings and oversee contract for exclusion zones (Activity 2.1.3)
- train fire fighting committees (Activity 2.1.5)
- strengthen capacity of forest service officers through trainings (Activity 2.1.6)

National consultant – protected areas
The consultant will be hired for six months in Y 1, four months in Y2, one month in Y3 and 12 months in Y4.
The mandate will be to:

- raise awareness of stakeholders on the potential to create a biosphere reserve (Y1) (Activity 1.3.1)
- map the biosphere reserve, its species, land uses, and land users (Y2) (Activity 1.3.2)
- organize a workshop to validate the application for Biosphere Reserve status (Y3) (Activity 1.3.3)
- write up the official biosphere reserve application form and management plans (Y4) (Activity 1.3.3)

International consultant - protected areas
The consultant, who will have experience with the UNESCO biosphere reserves will be hired for 10 days in Y1 and 10 days in Y4 to support the national consultant and FAO Mauritania office to :

- in the onset of the process - informing stakeholders of criteria and process to set up Biosphere Reserve and (Activity 2.3.1)
- the development and submission of the form to UNESCO in Y4. (Activity 2.3.4)

National consultant – renewable energy
The consultant will be hired for 6 months in Y1.
Its mandate will be to :

- organize and oversee awareness campaign for dissemination of biogas digestors and improved cookstoves (Activity 2.1.1 and Activity 2.2.1)
- oversee the allocation of contracts to an NGO/or private company (Activity 2.1.2 and 2.2.2)

National consultant – water infrastructure
The consultant will be hired for 8 months from Y2 to Y5.
The mandate of the consultant will be to assist site coordinators in overseeing:

- the location of pond rehabilitation, and overseeing the contract with NGO or private sector (Activity 3.1.1.)
- localisation and contracting of water reservoirs and dykes (Activity 3.1.2)
- localisation and contracting of water flow structures (Activity 3.1.3)
- creation and training of water user committees (Activity 3.1.5)

National consultant – agronomy
The national consultant will be hired for three months Y1- Y5. The mandate of the consultant will be to support the site coordinators with the following activities :

- including strengthening of producer coops, (Activity 4.1.1)
- purchases of tools and equipment (Activity 4.1.2)
- dissemination of resilient endemic species (Activity 4.1.3)
- the farmer fields schools. With regards to the latter, the consultant will contribute to developing the trainings of trainers to ensure SONADER farmer fields schools are up to date and meets the needs of the populations in the project zone (Activity 4.1.4)

International consultant – supply chains
The international consultant will support the four national consultants on supply chains in framing and developing the market analysis for the 4 selected supply chains. See note 27.

National consultants (4) – supply chains
Four national consultants will be hired for three months each to conduct market analysis for 4 products that the populations of the target areas are interested in producing and commercializing such as ballantines, moringa, salvadora tree, water lilies, aquaculture, arabic gum or pigeon pea. They should have experience with developing supply chains and/or experience with the selected supply chains.
They will assess : (i) size of potential market (ii) price trends (iii) market requirements (e.g. quality levels, processing levels, minimum volumes etc) (iv) potential buyers in order to make recommendations about how the target populations should produce and commercialize those products.

International consultant – mid term evaluation
An international consultant will be hired in Y3 to conduct a mid-term evaluation and make recommendations for the completion of the project, as per FAO requirements.

International consultant – final evaluation
An international consultant will be hired in Y5 to conduct a mid-term evaluation and make recommendations for the completion of the project, as per FAO requirements.

ANNEX 8 PROJECT PREPARATION PHASE REPORT

Dans le cadre du PPG, plusieurs activités ont été effectuées :

1. Recrutement

- International GEF Project Design Expert
- Six Consultants Nationaux
- Gestion Durable des Terres/Spécialiste en Restauration
- Spécialiste en Gestion Durable de l'agro-biodiversité
- Spécialiste en Changement climatique (Adaptation et Mitigation)
- Gestion Durable des forêts et des parcours / Spécialiste en foresterie/parcours
- Spécialiste en Renforcement institutionnel et partenariat
- Spécialiste en développement communautaire et Genre

2. Réunions, Missions et Atelier de Lancement

Durant cette phase de formulation du document du projet, plusieurs missions de terrain, ateliers, réunions de consultation ont été effectuées :

- Réunions du 02 Mai 2017 :
  - Réunion avec le ministre de l'environnement
  - Réunion avec les consultants nationaux pour réviser les composantes du projet et faire une présélection des sites

- Atelier de lancement 03 Mai 2017 :
  - La phase de préparation a débuté par un atelier de lancement qui s'est tenu à Nouakchott avec la participation de tous les acteurs concernés.

- Réunions du 04 Mai
  - Réunion avec les consultants sur l'aquaculture pour voir comment incorporer cette dimension dans notre projet.
  - Réunion avec les consultants nationaux : cette réunion a permis de développer un questionnaire pour la mission, de partager les responsabilités et de planifier la mission

- Mission du 05 Mai 2017
  - Première mission de terrain (05 au 10 Mai2017) : L'objectif global de la mission était de démarrer les consultations pour le lancement de la phase de formulation du projet

- Mission du 24 mai 2017
  - Deuxième mission (24 Mai au 02 Juin 2017): L'objectif global de cette mission était d'identifier les sites potentiels et les activités pertinentes pour la mise en œuvre du projet dans les trois wilayas à savoir Brakna, Gorgol et Assaba et plus précisément dans la zone d'El Atf, le tracé de la Grande Muraille Verte et dans la zone du triangle de l'espoir.

- Mission du 19 Juin 2017
  - C'est la troisième mission (19 au 23 Juin 2017) : L'objectif global de cette mission était d'obtenir la validation des sites pour la mise en œuvre du projet dans les trois wilayas et l''objectif spécifique était de recueillir les PV des réunions validant les sites d'intervention du projet et dûment signés par les Walis.

- Mission du 11 Aout 2017
  - C'est la quatrième mission : Validation des sites du Projet GEF (11 au 17 Aout 2017) : L'objectif global était de recueillir l'information manquante pour la rédaction du document de projet.

3. Résumé des ateliers de consultation

Dans le cadre de la préparation de l'atelier de validation, deux ateliers ont été organisés par l'ISET et le GNAP en collaboration avec la FAO à travers des protocoles d'accords (LOA).

L'objectif de ces deux ateliers étaient de recueillir les inputs et les recommandations des partenaires (Agriculteurs et Eleveurs) et de les prendre en compte dans le document final de projet.

i) Atelier de l'institut Supérieur de l'Enseignement Supérieur (ISET)

Synthèse

- Les débats faisant suite à la présentation du projet ont montré que les principales activités programmées répondent aux soucis et préoccupation des populations.
- Il faut noter que les attentes des populations vis-à-vis du projet sont énormes.
- Certains intervenants ont également fait part de leur crainte de se voir laisser en rade compte tenu de l'étendue de la zone d'intervention du projet et de l'immensité des problèmes de conservation des écosystèmes naturels et de la biodiversité qui leur est associée, de lutte contre le changement climatique et la désertification qui se posent en milieu rural. Cette crainte découle de l'absence de la wilaya du Trarza parmi les paysages ciblés par le projet.

ii) Atelier du Groupement National des Associations Pastorales

Synthèse

- L'atelier a été organisé par le GNAP à la demande de la FAO. Les conditions de préparation (salle, pauses, niveau de participation) et de déroulement (débat, la discipline) de cet atelier d'une journée ont été satisfaisantes ; seul le dispositif de suivi et évaluation prévu au programme n'a pu être couvert faute de temps.
- Cinquante participants représentant une diversité de parties prenantes (du public, du privé et de la société civile) ont participé à l'atelier. Quatre consultants ayant contribué à la formulation du projet ont assisté aux débats et apporté les éclairages nécessaires. Les échanges ont été de bonne facture intellectuelle.
- Les participants ont considéré le projet en alignement avec les priorités nationales et stratégies sectorielles du pays. Les choix des sites et des activités sont pertinents au regard du degré de vulnérabilité des communautés ou de l'état de dégradation des milieux naturels cibles. Le projet est également bien documenté et dénote une forte participation des communautés locales.
- Sur la base de ce qui précède, le document proposé a été globalement validé dans son contenu par l'ensemble des participants des différents ateliers.

4. Atelier de validation

Objectif

L'objectif de l'atelier était de présenter, de partager et de valider le document de projet avec les parties prenantes, la société civile et les institutions gouvernementales et non gouvernementales.

Synthèse

La présentation des sites du projet a été suivie d'une session d'échanges qui a porté essentiellement sur l'approche utilisée par les consultants pour identifier les différents sites du projet ainsi que les forces et faiblesses de chaque montage institutionnel, la cohérence et l'alignement aux objectifs du Programme, les synergies et partenariats avec les autres interventions, les arrangements de gestion ainsi que la mobilisation des ressources.

Les participants ont salué l'initiative de l'équipe technique du Projet pour avoir inclues les parties prenantes dans la formulation du document de projet et exprimé leur souhait de voir les dispositions en vue de sa mise en application dans les plus brefs délais.

Globalement, la qualité du document et les recommandations des consultants ont été appréciées par l'ensemble des participants.

ANNEX 9 AVAILABLE TECHNOLOGIES FOR WATER RETENTION AND MOBILIZATION

- Exploitation des eaux de surface par les barrages et petits barrages : Les barrages sont du ressort de l'Etat. Le plus grand du pays est le Barrage de Foum Gleïta au Gorgol

- Exploitation des eaux du fleuve Sénégal et des mares (pompage) : C'est la principale technique au niveau du fleuve Sénégal (sud mauritanien, frontière avec le Sénégal) : Aménagements de l'Etat, périmètres villageois et privés

- Techniques des Cordon pierreux, Zai, Lune et demi-lune : Introduction récente mais de plus en plus pratiqué, promue pas les projets luttant contre la dégradation des terres

- Développement des ressources en eau par aménagement des mares : Par l'Etat et les groupements locaux

- Exploitation des eaux souterraines par puits, boulis et forages (mis en place surtout par l'Etat et les grands projets

- Systèmes goutte à goutte : Maraîchage et cultures oasiennes

- Technologie solaire photovoltaïque appliquée au pompage d'eau souterraine : Qui se développe dans les oasis

- Technique des petites retenues d'eau ou bassins de rétention : Appuyé par GIZ et des ONG locales et régionales dans le Guidimakha mais qui se développe ailleurs

ANNEX 10 EX-ACT BRIEF: EX-ANTE GHG APPRAISAL OF THE INTEGRATED ECOSYSTEM MANAGEMENT PROJECT FOR THE SUSTAINABLE HUMAN DEVELOPMENT IN MAURITANIA

This *EX-ACT Brief* concisely presents the results of the ex-ante GHG assessment of the Integrated Ecosystem Management Project for the Sustainable Human Development in Mauritania. It was prepared for submission as annex to the CEO Endorsement Request and updated from the original annex to the project identification form.
The brief intends to quantify main project GHG impacts by project component and transparently document the input data of agricultural field activities and areas on which the assessment is based. It thus allows subsequent GHG assessments at mid-term and project finalization stages to update area target and monitor ongoing achievements of GHG benefits. The results of the EX-ACT brief may likewise be used to target potential, more comprehensive GHG monitoring activities under the project to the most relevant priority project components from a GHG point of view.

The EX-ACT appraisal used Tier 1 level of specification and is based on area targets of sustainable land management provided by the project appraisal team. A brief summary of methodology and practicalities of the EX-ACT tool and its application is accessible through the EX-ACT Quick Guidance document.

The Ex Ante Carbon-balance Tool, developed by FAO, aims at providing ex-ante estimations of the impact of agriculture and forestry development projects on GHG emissions and carbon sequestration, indicating its effects on the carbon balance.

Project Activities

The EX-ACT tool utilizes area estimates of improved land management and production practices at project end as input data. The current analysis adopts the continuation of the status-quo as the baseline scenario. In the absence of refined field data it is thus conservatively assumed that in absence of the project land degradation processes would not further intensify beyond current stages. This decision avoids that strong claims of mitigation benefits are made on a basis without the provision of justifying field data.

The analysis below differentiates between direct project impacts that are achieved by direct project activities and indirect project impacts that are supported through project actions and will result from the associated scaling-up process and the baseline projects and initiatives. The main project components can thereby be differentiated as follows.

Table 1: Direct and indirect project activity targets with GHG mitigation impacts

	Direct project targets (ha)	Indirect project targets (ha)
Grassland rehabilitation	150,000	200,000
Forest rehabilitation	2,355	9,600
Cropland rehabilitation	5,000	15,000
Reforestation/Afforestation	3,000	17,000
Total	**160,355**	**241,600**

Results

Considering the above activity scenario, the Integrated Ecosystem Management Program in Mauritania will provide direct total mitigation benefits of roughly 4,751,979 tCO_2eq over a period of 20 years. This is equivalent to annual mitigation benefits of 1.5 tCO_2eq per hectare.

Major parts of the estimated carbon sequestration benefits under the analysis stem from increased soil carbon levels as a consequence of the rehabilitation and improved management process. Estimates could be refined during project implementation by utilizing improved data on current degradation states and measurements of actual achieved improvements. As part of this ex-ante assessment the average soil carbon levels as reported by the IPCC for tropical dry area have been used instead, as detailed in the EX-ACT methodology.

Table 2: Ex-ante Carbon-balance of direct project impacts on 160,355 ha

The EX-Ante Carbon-balance Tool (EX-ACT) - Standard Edition

Start | Description | Land Use Change | Crop production | Grassland Livestock | Land degradation | Inputs Investments | Detailed Results

Project Name	0	Climate	Tropical (Dry)	Duration of the Project (Years)	20
Continent	Africa	Dominant Regional Soil Type	LAC Soils	Total area (ha)	160355

Components of the project	Gross fluxes Without	With	Balance	Share per GHG of the Balance CO_2 Biomass	Soil	Other	N_2O	CH_4	Result per year Without	With	Balance
	All GHG in tCO2eq Positive = source / negative = sink										
Land use changes											
Deforestation	0	0	0	0	0		0	0	0	0	0
Afforestation	0	-609,722	-609,722	-377,567	-232,155		0	0	0	-30,486	-30,486
Other LUC	0	-217,708	-217,708	-73,333	-144,375		0	0	0	-10,885	-10,885
Agriculture											
Annual	0	0	0	0	0		0	0	0	0	0
Perennial	0	0	0	0	0		0	0	0	0	0
Rice	0	0	0	0	0		0	0	0	0	0
Grassland & Livestocks											
Grassland	0	-3,811,500	-3,811,500	0	-3,811,500		0	0	0	-190,575	-190,575
Livestocks	0	0	0				0	0	0	0	0
Degradation & Management	0	-113,049	-113,049	-85,849	-27,200		0	0	0	-5,652	-5,652
Inputs & Investments	0	0	0			0	0		0	0	0
Total	0	-4,751,979	**-4,751,979**	-536,749	-4,215,230	0	0	0	0	-237,599	-237,599
Per hectare	0	-30	-30	-3.3	-26.3	0.0	0.0	0.0			
Per hectare per year	0.0	-1.5	-1.5	-0.2	-1.3	0.0	0.0	0.0	0.0	-1.5	-1.5

When considering indirect project impacts instead, a total of 241,000 ha are targeted with improvements in the long run. With the improvements on such a wider scale a total of approximately 9.2 million tCO_2eq of mitigation benefits could be achieved over 20 years. This is equivalent to annual mitigation benefits of 1.9 tCO_2eq per hectare.

Table 3: Ex-ante Carbon-balance of indirect project impacts on 241,000 ha

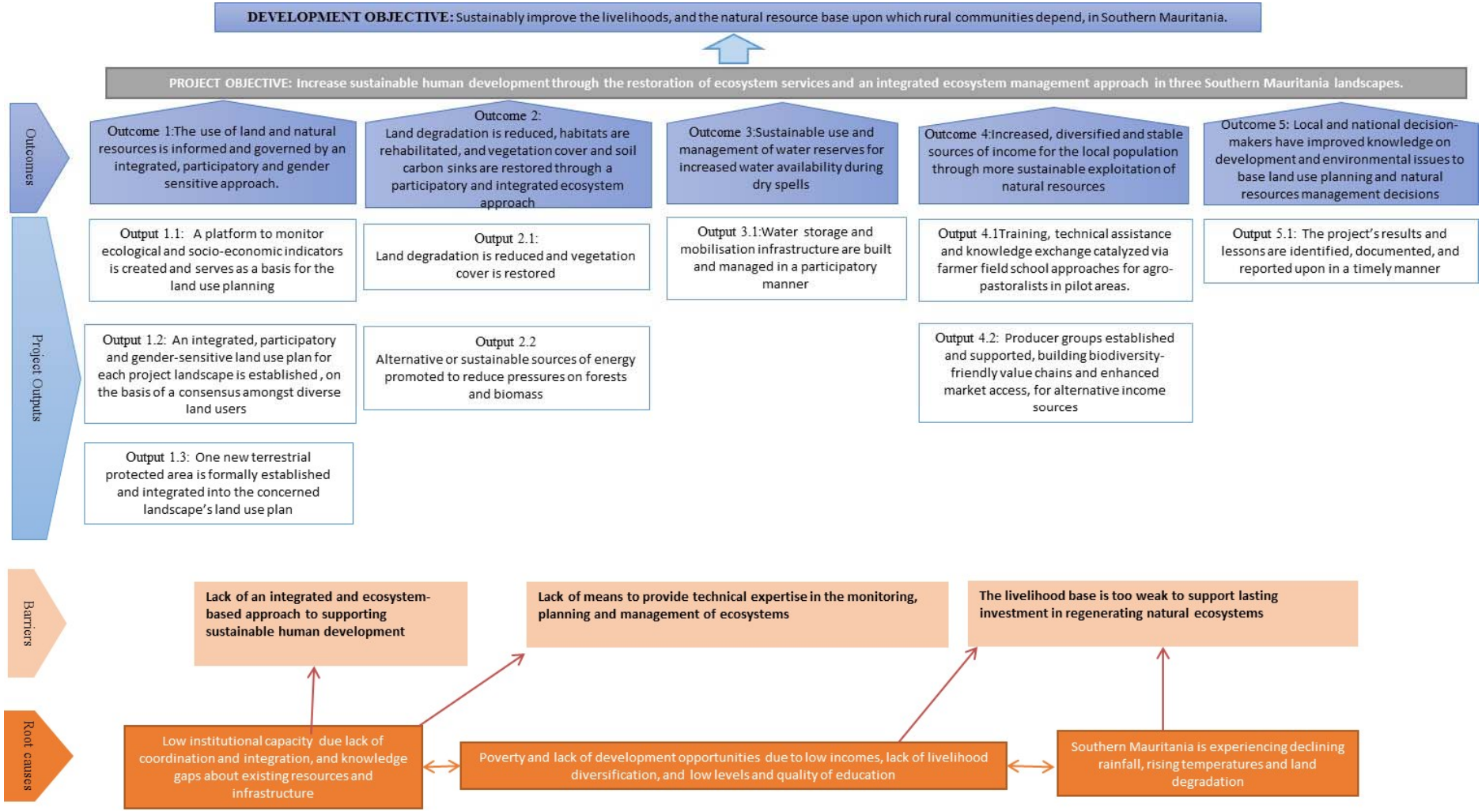
The EX-Ante Carbon-balance Tool (EX-ACT) - Standard Edition

Start | Description | Land Use Change | Crop production | Grassland Livestock | Land degradation | Inputs Investments | Detailed Results

Project Name	0	Climate	Tropical (Dry)	Duration of the Project (Years)	20
Continent	Africa	Dominant Regional Soil Type	LAC Soils	Total area (ha)	241600

Components of the project	Gross fluxes Without	With	Balance	Share per GHG of the Balance CO_2 Biomass	Soil	Other	N_2O	CH_4	Result per year Without	With	Balance
	All GHG in tCO2eq Positive = source / negative = sink										
Land use changes											
Deforestation	0	0	0	0	0		0	0	0	0	0
Afforestation	0	-3,455,089	-3,455,089	-2,139,544	-1,315,545		0	0	0	-172,754	-172,754
Other LUC	0	-653,125	-653,125	-220,000	-433,125		0	0	0	-32,656	-32,656
Agriculture											
Annual	0	0	0	0	0		0	0	0	0	0
Perennial	0	0	0	0	0		0	0	0	0	0
Rice	0	0	0	0	0		0	0	0	0	0
Grassland & Livestocks											
Grassland	0	-4,620,000	-4,620,000	0	-4,620,000		0	0	0	-231,000	-231,000
Livestocks	0	0	0				0	0	0	0	0
Degradation & Management	0	-460,838	-460,838	-349,958	-110,880		0	0	0	-23,042	-23,042
Inputs & Investments	0	0	0			0	0		0	0	0
Total	0	-9,189,053	**-9,189,053**	-2,709,503	-6,479,550	0	0	0	0	-459,453	-459,453
Per hectare	0	-38	-38	-11.2	-26.8	0.0	0.0	0.0			
Per hectare per year	0.0	-1.9	-1.9	-0.6	-1.3	0.0	0.0	0.0	0.0	-1.9	-1.9

ANNEX 11 THEORY OF CHANGE OF THE PROJECT



ANNEX 12 REQUEST FROM THE GOVERNMENT FOR DIRECT SUPPORT SERVICES FROM FAO

République Islamique de Mauritanie
Honneur – Fraternité – Justice

Ministère de l'Environnement et du Développement Durable

الجمهورية الإسلامية الموريتانية
شرف – إخاء – عدل

وزارة البيئة والتنمية المستدامة

N° 106 / MEDD/M

Nouakchott, le: 12 MARS 2018 انواكشوط في

Le Ministre الوزير

A
CEO and Chairperson
Global Environment Facility

Objet : Fourniture de services directs d'appui à l'exécution du « ***Projet de gestion intégrée des écosystèmes pour un développement humain durable en Mauritanie*** »

Madame, Monsieur

Suite à l'endossement par Le Ministère de l'Environnement et du Développement Durable du projet en objet, nous soussigné sollicitons de la FAO qu'elle fournisse des services directs d'appui à l'exécution du projet, y compris l'appui administratif nécessaire et de gestion financière conformément aux règles et procédures de la FAO.

Je vous prie d'agréer Madame/Monsieur l'expression de nos sentiments distingués

DATE : 12 MAR
FAO REP :
ACTION :

AMEDI CAMARA

Le Ministre

Unofficial translation

To the CEO and Chairperson of the Global Environment Facility

Subject: Provision of direct support services to the execution of the '*Integrated ecosystem management project for the sustainable human development in Mauritania*'

Madam, Sir,

Following the endorsement of the above mentioned project by the Ministry of Environment and Sustainable Development, we request FAO to provide direct support services to the execution of the project, including administrative support as needed, as well as financial management, coherent with FAO rules and procedures.

Yours sincerely,

Amedi CAMARA -Minister of Environment and Sustainable Development

ANNEX 13 TRANSLATION OF THE CO-FINANCING LETTERS

See original letters in separate documents

Unofficial translation of the co-financing letter from the Government of Mauritania

Re: National contribution to the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

Following the endorsement by the Mauritanian Government of the above mentioned project through the Ministry of Environment and Sustainable Development, asking the FAO to formulate a GEF-6 STAR project, we confirm that the project *Integrated ecosystem management project for the sustainable human development in Mauritania* is inscribed in the Public Investment Programme (2018-2020) which is currently being finalised.

Sincerely,

Unofficial translation of the co-financing letter from the Ministry of Environment

Re: Co-financing of the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

Madam, Sir,
It is with great pleasure that I confirm our support to the above mentioned project. The National Agency of the Great Green Wall has been actively participated in all the steps of the preparation phase and the validation workshop of the document. We note with pleasure considers the needs and expectations of the Agency.

The Agency is disposed to accompany the implementation of particularly components 1 and 2 of the project. Co-financing includes the regular programme of the Agency and reaches about USD 3 400 000, both in-kind and cash. Details are provided below.

We are confident that the GEF project will help mainstreaming an integrated approach, leveraging our efforts for sustainable ecosystem management and human development in the intervention zones.

We remain close to FAO and other partners of this project to ensure its success.

Sincerely

Unofficial translation of the co-financing letter from the Ministry of Livestock

Re: co-financing of the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

Madam, Sir,
It is with pleasure that I confirm the support of our department to the above mentioned project. We have been involved in all the steps of the preparation phase and are happy with the fact our concerns and expectations as Ministry of Livestock have been considered duly.

The Ministry is ready to accompany de implementation of this project through parallel projects mentioned below.

The Integrated ecosystem management project for the sustainable human development in Mauritania has been identified to strengthen our efforts to sustainably manage agro-ecosystems in Mauritania. The co-financing is proposed through the RIMRAP, PDRI and PRAPS projects and represent an overall amount of USD 4 million, in cash and in-kind, for the duration of the project.

We are confident that the GEF project will help mainstreaming an integrated approach, leveraging our efforts for sustainable ecosystem management and human development in the intervention zones.

Sincerely

Unofficial translation of the co-financing letter from the Ministry of Water and Sanitation
Re: Co-financing of the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

Madam, Sir,
It is with pleasure that I confirm our support to the above mentioned project. We have been involved in all the steps of the preparation phase and the validation workshop of the document. We note with pleasure that this project builds synergies with our action in the intervention zones and that targeted populations will benefit from the project. We are disposed to accompany the implementation of the project, in particular through our Integrated Rural Services National Programme (PNISER).

The project *Integrated ecosystem management project for the sustainable human development in Mauritania* has been identified in response to our common objectives to strengthen the sustainable development of agro-ecosystems in Mauritania. The co-financing proposed reaches about USD5 000 000, both in-kind and cash. Details are provided below.

We are confident that the GEF project will help mainstreaming an integrated approach, leveraging our efforts for sustainable ecosystem management and human development in the intervention zones.

We remain close to FAO and other partners of this project to ensure its success.

Sincerely

Unofficial translation of the co-financing letter from the Ministry of Agriculture
Re: Co-financing of the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

To the Representative,
It is with pleasure that I confirm our support to the above mentioned project. Our Department has been involved in all the steps of the preparation phase and we are pleased to see that it takes into account the needs and expectations of the Ministry of Agriculture.

The Ministry is disposed to accompany the implementation of the above mentioned project through contributions that are further detailed below.

The project *Integrated ecosystem management project for the sustainable human development in Mauritania* is in support to strengthen our efforts to sustainably manage agro-ecological systems in Mauritania. The co-financing proposed for this project involves the projects PGIRE II, PASK II, PRODEFI, PATA and P2RS and reaches about USD5 000 000, both in-kind and cash.

We are confident that the GEF project will help mainstreaming an integrated approach, leveraging our efforts for sustainable ecosystem management and human development in the intervention zones. We remain close to FAO and other partners of this project to ensure its success.

Sincerely

Unofficial translation of the co-financing letter from Tadamoun
Re: co-financing of the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

Madam, Sir,
It is with pleasure that I confirm the support of our Agency to the above mentioned project. We have been involved in all the steps of the preparation phase and the validation workshop of the document. We note with pleasure that synergies with our interventions on the ground are proposed, benefitting the targeted population of the Tadamoun interventions. Therefore, Tadamoun is disposed to support the above mentioned project during its implementation, of components 2 and 3.

The project *Integrated ecosystem management project for the sustainable human development in Mauritania* has been identified to strengthen our efforts to sustainably manage agro-ecosystems in Mauritania. The proposed co-financing represents approximately USD3.3 million for the full duration of the project. This amount corresponds to the

implementation cost of Tadamoun executed activities, part of its multi-year action plan benefitting target populations in the same intervention area as the project.

We are confident that the GEF project will help mainstreaming an integrated approach, leveraging our efforts for sustainable ecosystem management and human development in the intervention zones.

Sincerely

Unofficial translation of the co-financing letter from FAO

Re: Co-financing of the project *Integrated ecosystem management project for the sustainable human development in Mauritania*

It is with great pleasure that I send you this letter to confirm our support to the above mentioned project. The FAO as GEF Agency, has participated in all the phases of the project formulation, conducting field missions, recruiting national and international consultants and the preparation of launching and validation workshops.

The project *Integrated ecosystem management project for the sustainable human development in Mauritania* is aligned to our efforts to strengthen the sustainable development of agro-ecosystems in Mauritania. The FAO is therefore happy to support the project during its implementation phase, through management and coordination support. The co-financing is USD 1 500 000, both in-kind and grant.

We are confident that the co-financing from the GEF will help demonstrate the interest of integrated approaches for sustainable management of ecosystems and for a sustainable human development in the intervention area of the project.

Sincerely