Ecosystem-based Adaptation (EbA) for resilient natural resources and agro-pastoral communities in the Ferlo Biosphere Reserve and Plateau ofThies

Part I: Project Information

GEF ID
10691

Project Type
FSP

Type of Trust Fund
LDCF

CBIT/NGI
- [ ] CBIT
- [ ] NGI

Project Title
Ecosystem-based Adaptation (EbA) for resilient natural resources and agro-pastoral communities in the Ferlo Biosphere Reserve and Plateau ofThies

Countries
Senegal

Agency(ies)
UNDP, IUCN

Other Executing Partner(s)
Senegalese Agency for Reforestation of the Great Green Wall (ASRGM)

Executing Partner Type
Government

GEF Focal Area
Climate Change

Taxonomy
Focal Areas, Biodiversity, Protected Areas and Landscapes, Terrestrial Protected Areas, Productive Landscapes, Community Based Natural Resource Mngt, Species, Wildlife for Sustainable Development, Biomes, Grasslands, Tropical Dry Forests, Mainstreaming, Tourism, Agriculture and agrobiodiversity, Climate Change, Climate Change Adaptation, Private sector, Ecosystem-based Adaptation, Community-based adaptation, Mainstreaming adaptation, Climate information, Adaptation Tech Transfer, Innovation, Climate resilience, Least Developed Countries, National Adaptation Programme of Action, Livelihoods, Influencing models, Transform policy and regulatory environments, Demonstrate innovative approache, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Stakeholders, Local Communities, Beneficiaries, Private Sector, Individuals/Entrepreneurs, SMEs, Capital providers, Large corporations, Civil Society, Academia, Community Based Organization, Non-Governmental Organization, Communications, Awareness Raising, Behavior change, Education, Gender Equality, Gender Mainstreaming, Women groups, Sex-disaggregated indicators, Gender-sensitive indicators, Capacity, Knowledge and Research, Capacity Development, Enabling Activities, Learning, Adaptive management

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 0

Climate Change Adaptation
Climate Change Adaptation 2

Duration
60 In Months

Agency Fee($)
848,580.00

Submission Date
9/25/2020

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CCA-1	LDCF	6,032,420.00	22,250,000.00
CCA-2	LDCF	2,900,000.00	4,200,000.00
	Total Project Cost ($)	**8,932,420.00**	**26,450,000.00**

B. Indicative Project description summary

Project Objective

Promote Ecosystem-Based Adaptation (EbA) in the Ferlo Biosphere Reserve (FBR), and in the Plateau and city of Thies to strengthen the resilience of biodiversity, ecosystem services and agropastoral communities to the impact of increasing climate change, and the associated risks of annual droughts and floods.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount($)	Co-Fin Amount($)

Component 1: Developing regional and local governance for climate resilience through EbA	Investment	Outcome 1.1 Stakeholders' capacities in planning and implementing EbA to maintain and/or create climate-resilient natural capital are strengthened.	Output 1.1.1. Functional analysis of the key institutions to formulate and enforce EbA policies conducted Output 1.1.2. The participatory governance bodies of the FBR and the Plateau of Thies are restructured/revitalized and strengthened for better coordination of decision-making in response to climate change risks Output 1.1.3. Stakeholder training programs are conducted to instill the skills and knowledge for climate-resilient decision-making Output 1.1.4. A technical expert committee is set up to advise on the mainstreaming of EbA in local land management strategies; Output 1.1.5. The EWS under the ANACIM is equipped to strengthen the observation and dissemination of climate data in the project areas Output 1.1.6. Land use and management plans are reviewed and updated to integrate the EbA approach within regional and local regulations, policies and systems of decision-making	LDCF	1,457,920.00	2,600,000.00

Component 2: Restoration and conservation management to increase resilience of natural assets and ecosystem services	Investment	Outcome 2.1 Agropastoralists' livelihoods, natural ecosystems and productive landscapes in project sites are more resilient to climate change through the adoption of EbA practices.	Output 2.1.1. Degraded agropastoral rangelands (including pastoral routes) are regenerated; Output 2.1.. Degraded FBR agro-pastoral ecosystems are restored through nature-based solutions; Output 2.1.3. Green infrastructure, (i.e. bunds, embankments, weirs, earth dams) will be installed to improve access to water resources for local producers Output 2.1.4. EbA measures are implemented on the Plateau of Thies to reduce flooding in the city of Thies. Output 2.1.5. A program to restore a climate-resilient green belt is implemented in the commune of Thies	LDCF	3,464,647.00	12,500,000.00

Component 3: Investment in climate-resilient value chains	Investment	Outcome 3.1. Private sector investment in value-chains producing goods and services based on the sustainable use of natural resources, in a climate change context. Outcome 3.2. Local entrepreneurs and SMEs produce goods and services based on the sustainable use of natural resources	Output 3.1.1. A private sector platform is set up to better coordinate value-chain activities that promote EbA; Output 3.1.2. Stakeholder forums are organised to catalyse private and public sector investments towards the creation of resilient natural capital; Output 3.2.1. Local entrepreneurs, in particular women and youth, are trained to develop and commercialize products and services based on the sustainable use of natural resources, taking into account climate change Output 3.2.2. SMEs based on the sustainable use of natural resources are provided with equipment (i.e. for the establishment of nurseries, village multi-purpose gardens, fodder reserves and integrated model farms) and agriculture and forestry inputs 3.2.3. SMEs based on the sustainable use of natural resources are provided with training to access financing opportunities to promote the adoption of resilient practices that protect and conserve targeted ecosystems	LDCF	3,224,500.00	10,700,000.00

Component 4 Knowledge management, and monitoring and evaluation (M&E)	Investment	Outcome 4.1 Relevant local and national stakeholders are able to incorporate EbA approaches into their land management activities, drawing on the experience from the FBR and Thies.	Output 4.1.1. An M&E plan, including a set of indicators, and data collection and processing protocols, is developed and implemented. Output 4.1.2 A communication strategy aimed at the relevant local and national stakeholders is developed and implemented Output 4.2.3. A summary and dissemination document (report, manual or guide) of the project outcomes, lessons learned and good practices is produced and disseminated Output 4.1.4. A strategy for scaling up the EbA and developing natural resource-based SMEs, including long-term financing options, is developed and the implementation of key recommendations is supported.	LDCF	360,000.00	150,000.00
				Sub Total ($)	**8,507,067.00**	**25,950,000.00**
Project Management Cost (PMC)						
				LDCF	425,353.00	500,000.00
				Sub Total($)	**425,353.00**	**500,000.00**
				Total Project Cost($)	**8,932,420.00**	**26,450,000.00**

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Senegalese Agency for the Reforestation of the Great Green Wall (ASRGM)	In-kind	Investment mobilized	500,000.00
Recipient Country Government	National Government: The Project for Sustainable Development of Pastoralism in the Sahel (PDDPS)	In-kind	Investment mobilized	4,500,000.00
Donor Agency	IFAD: The Agricultural Development and Rural Entrepreneurship Support Program (PADAER II)	In-kind	Investment mobilized	10,000,000.00
Donor Agency	IDB, AfDB: 5. The Emergency Community Development Progra (PUDC Phase 2)	In-kind	Investment mobilized	100,000.00
Donor Agency	IDB: 6. Program for the Modernization of Cities (PROMOVILLES), Phase 2	In-kind	Investment mobilized	10,000,000.00
Private Sector	COSEER	Grant	Investment mobilized	200,000.00
Private Sector	SONOTEL	Grant	Investment mobilized	500,000.00
GEF Agency	UNDP	Grant	Investment mobilized	500,000.00
Beneficiaries	Municipalities covered by the project	In-kind	Recurrent expenditures	150,000.00
			Total Project Cost($)	**26,450,000.00**

Describe how any "Investment Mobilized" was identified

Investment mobilized comes from five baseline projects identified and selected for their complementarity with the LDCF project, in addition to two private sector financers, which were identified through bilateral discussions between UNDP and the companies.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNDP	LDCF	Senegal	Climate Change	NA	5,291,826	502,724	5,794,550.00
IUCN	LDCF	Senegal	Climate Change	NA	3,640,594	345,856	3,986,450.00
				Total GEF Resources($)	**8,932,420.00**	**848,580.00**	**9,781,000.00**

E. Project Preparation Grant (PPG)

PPG Required ☑

PPG Amount ($)

200,000

PPG Agency Fee ($)

19,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNDP	LDCF	Senegal	Climate Change	NA	110,000	10,450	**120,450.00**
IUCN	LDCF	Senegal	Climate Change	NA	90,000	8,550	**98,550.00**
				Total Project Costs($)	**200,000.00**	**19,000.00**	**219,000.00**

Part II. Project Justification

1a. Project Description

1.a.1 The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

The Republic of Senegal (hereafter Senegal) is a coastal Least Developed Country (LDC) in West Africa, where agriculture accounts for more than 70% of the workforce[1]. Agropastoral communities are particularly vulnerable to the impacts of climate change due to their dependence on natural resources for food and livelihoods. The extreme poverty rate in Senegal is reported at 35.7% (2015 data), and multi-dimensional poverty at 46.7% (2013 data) and is concentrated in the Northern dry desert landscapes used by pastoralists. While its Human Development Index (HDI) value has shown a favourable trend – increasing from 0.367 in 1990 to 0.514 in 2019, Senegal currently still ranks low at 166th among 189 countries.

The frequency and intensity of extreme weather events, in particular droughts, heavy rains, periods of high or low temperatures has been observed and is predicted to increase due to climate change[2]. A current rise in temperatures by +1°C has been recorded, with forecasts for 2020-2029 of 1 to 1.5°C and 3 to 4.5°C for 2090-2099, which would generate situations of severe thermal stress that could seriously jeopardize plant (increased evapotranspiration) and animal productivity[3]. These climate changes are translated into the increasing occurence of dry years (in 2002, 2007, 2011 and 2014),[4] further exacerbated by the increased evapotranspiration caused by higher temperature.

In parallel, maladaptive practices are adopted by agropastoral communities and other natural resource users (such as overgrazing and deforestation), in particular as was initiated following the extreme adverse impacts of the Sahelian droughts of the 70s and 80s on traditional livelihoods. These practices tend to exacerbate the impacts of climate change, further damaging the ecosystems they depend on, and having far reaching consequences for other stakeholders in both urban and rural settings. The interrelation of climate and anthropogenic impacts are reflected by the widespread degradation with 64% of degraded arable land, of which 74% results from erosion and the rest from salinization[5]. The annual cost of land degradation in Senegal is estimated at USD $ 996 million, including deterioration in food availability, and reduction of soil fertility, carbon sequestration capacity, wood production, and groundwater recharge[6]. Anecdotally, social conflict between migrant herders and sedentary farmers is occurring as both expand their use areas to compensate for climate impacts that considerably aggravate the main drivers of degradation and loss of productive land [7].

The climate change-induced increased rainfall variability, translated into more frequent dry years and intense rainfalls, combined with anthropogenic factors (i.e. forest clearing around the city, bush fires and overgrazing, rapidly growing urbanization, extensive mining) are leading to land degradation, loss of biological diversity, reduction of agricultural production areas, loss of ecological breeding sites (many animal species have seen their habitats disrupted) as well as social instability. In turn, these climate and anthropogenic impacts are reducing the adaptive services of critical ecosystems, such as water supply and quality regulation or the moderation of extreme climate events (more details on the project targeted areas are available below).

In addition, COVID-19 severely impacted most vulnerable people and communities, that are already under stress as a result of the climate crisis and global biodiversity losses. Since March 2020, the local governments in Senegal have banned large markets (loumas) selling livestock, cutting off agropastoralists' key source of income. In addition to the direct impact of COVID-19 on Senegal's economy in terms of illness and deaths (reportedly 13,655 and 284 as of September 1st, 2020)[8] and government-imposed restrictions, Senegal is also dependent on remittances from abroad and is therefore exposed to **worldwide job losses and a global recession.** In 2019, **Senegal received an estimated US$2.52 billion in remittances, representing 10% of the country's GDP**[9]**. These are likely to shrink dramatically in the short term and highlights the vulnerability of the country to future global emergencies.** Additionally, land mismanagement, habitat loss, overexploitation of wildlife, and human-induced climate change have created pathways for infectious diseases to transmit from wildlife to humans[10].

In this context, the Government of Senegal, through the Agence Sénégalaise de la Reforestation et de la Grande Muraille Verte (ASRGM), identified two project sites (the Ferlo Biosphere Reserve (FBR) in the North and Thies in the East of the country) considered a priority in terms of climate vulnerability, environmental degradation and high socio-economic importance, as well as the opportunities to address these vulnerabilities through ecosystem restoration and regeneration. In addition, the implementation of EbA practices in both landscapes (urban and rural) will provide lessons learned and best practices to be replicated at a larger scale and introduced into NAP priorities. Indeed, the FBR is a rural, biodiverse zone, and Thies is in and around a large urban population center. This will enable the project to build a strong knowledge base for future scale-up of Ecosystem-based Adaptation (EbA) across both urban and rural landscapes (maps are available in Section 1.b).

The Ferlo Biosphere Reserve (FBR)

The FBR was selected to represent the rural landscape zone in this project, as identified as a priority by the Government of Senegal, due to the climate change vulnerability of its communities, its economically important livestock industry and its high biodiversity and due to its location within the Great Green Wall corridor.

The FBR is located in Northern Senegal and covers an area of 2,058,216 ha, split into three zones of which (i) 242,564 ha is wildlife reserve for conservation and protection of the biodiversity of endemic and threatened species, (ii) 1,156,633 ha is a buffer zone, with ecologically important habitats and (iii) the remainder are transition or cooperation zones, where natural resources can be harvested and used towards sustainable development, following a set of regulations. It is home to 120 herbaceous species in 69 genera in 23 families; 51 woody species in 35 genera in 19 families; 37 animal species and a large bird population[1]. The FBR was officially recognized by UNESCO in 2012, following a decade of work by UNDP, IUCN and other key stakeholders to establish the reserve. The FBR is located in the area of Senegal where the Great Green Wall (a pan-African initiative to plant a wall of trees from Dakar to Djibouti as a tool to combat desertification) is being implemented. In addition to its very rich biodiversity, the wider Ferlo Basin is of strategic importance in Senegal, producing 42% of the cattle supplying Dakar[2]; within the FBR 90% of the 60,000 inhabitants are involved in pastoralism. The FBR is central to the mobility strategies of pastoralists in their search for fodder resources for their herds. Their pastoral activity is characterized by a large herd, large forage resources and good milk production during the winter[3]. Subsistence farming is the second most important activity, and generally involves rain-fed household agriculture and livestock farming, with little diversification. The harvest of timber and non-timber resources is also important for the local rural economy.

Historic climate information

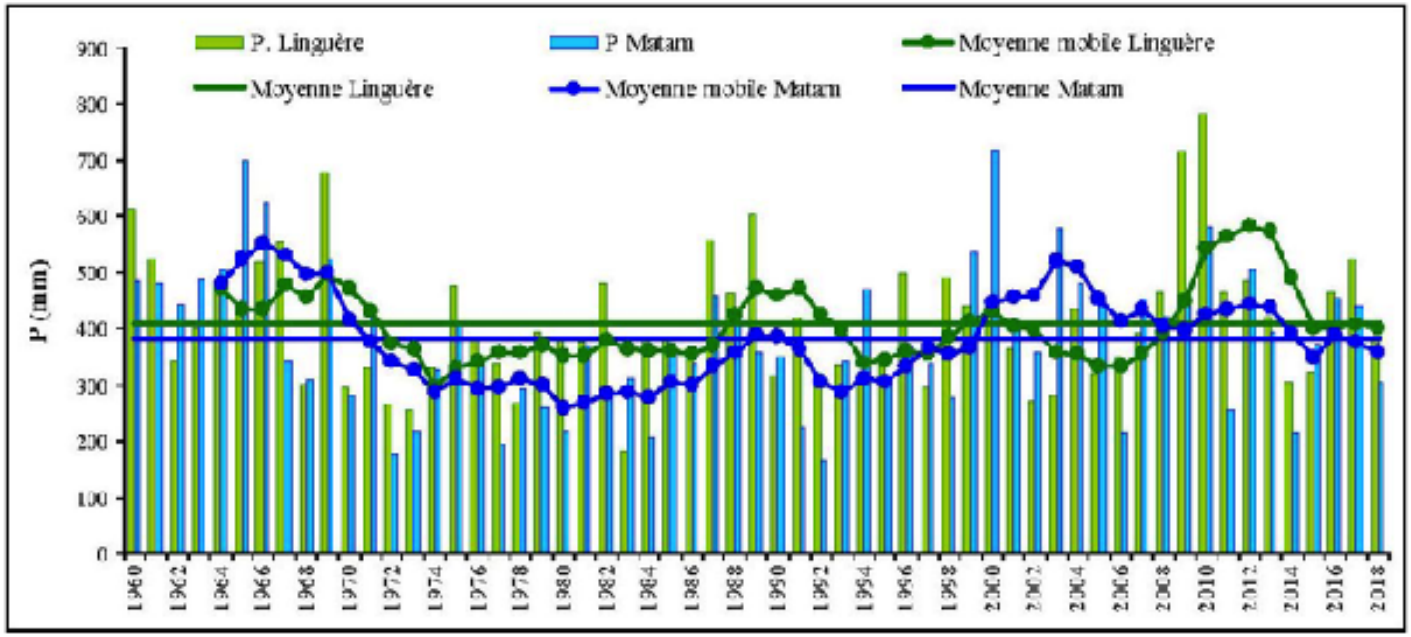

Figure 1. Evolution of rainfall in the Ferlo Biosphere Reserve between 1960 and 2018 (Sylla et al., 2019

The FBR is already subject to an ongoing process of desertification caused by more frequent climate change-induced rainfall deficient years[1]. Over the period 1960-2018, average annual rainfall was only 411 mm in Linguère and 383 mm in Matam, and while average rainfall has increased since the late 1990s compared to the previous decades, data shows significant variability with more frequent dry years[2] (Figure 1).

Studies have shown fodder availability for livestock (biomass) is directly correlated with rainfall in the Sahel[3], and data from the 2005-2015 period shows an incremental decline in biomass production in the Ferlo region[4]. Bush fires (and therefore decreased fodder availability) have exacerbated the impact of biomass loss, which predominately occur in Ferlo-South[5],[6],[7]. Furthermore, some herbaceous and woody species with high forage value for livestock are threatened by maladaptive practices including deforestation and competition over land uses that hinders the mobility (and therefore resilience) of herds: between 1965 and 2019 increase in land use were +112% for housing and +47% agriculture[8]. Rainfall variation also has a direct effect on milk production. For example, the volumes of milk collected by Laiterie du Berger (LDB) dropped by 33% in 2014, following another exceptionally rainfall deficient year[9].

Future Climate Scenario

Climate forecasts show that climate change is expected to impact the FBR through: (i) the high variability of rainfall (shortening of rainy seasons and reduction in the number of rainy days)[1]; (ii) the increased occurrence of dry periods; (iii) the upward trend in maximum rainfall, increasing flood risks with significant damage and losses on socio-economic (crops, infrastructure) and human systems; and (iv) the current rise in temperatures (+1°C) with forecasts of +1 to +1.5°C for 2020-2029 and +3 to +4.5°C for 2090-2099, threatening plants (increased evapotranspiration) and animal productivity[2] .

The City of Thies and surrounding area

The City of Thies was selected to represent the urban landscape zone in this project, providing a parallel perspective on EbA next to the rural zone of FBR. It was identified as a priority by the Government of Senegal due to the climate change vulnerability of its large urban population, in particular to the severe impacts of flooding, the link between exacerbation of the climate impacts and the pastoral activities outside the city, and the opportunity that EbA offers to address observed and forecasted climate impacts.).

The City of Thies is located in the Region of Thies, in the Western part of the country, approximately 70 km east of Dakar. It is Senegal's third largest city and oversees seven municipalities (Kayar, Khombole, Pout, Fandene, Mont Rolland, Notto-Diobass and Keur Moussa) with an estimated population of 496,740 inhabitants (in 2020)[10].

Geographically, the city's dominant feature is the Plateau of Thies, running across its Western edge with an elevation of approximately 130 m. The Plateau of Thies extends beyond the boundaries of the city, and straddles the administrative regions of Thies and Dakar, covering an area of more than 4,000 km². It has an important ecosystem function in terms of water supply, as many rivers and wetlands of importance have their source on the Plateau, including the Somone River, Lake Tanma, the Fandene Valley, the Diobass Valley, and much of the water consumed in and around Dakar comes from the Plateau[11]. Once an extensive green ecosystem, it is now degraded, though still offers many opportunities in agriculture, pasture, forestry and mining activities[12] .

Historic climate information

The ecosystem functions of the Plateau of Thies have been disrupted by persistent drought cycles since the 1970s (Sy and Kabo, 2013). The rainfall pattern observed from 1955 to 2010 shows a jagged curve and reflects (i) the frequency of dry sequences from the early 1970s until the 1990s, (ii) followed by a series of rainy years from 2000 with acute deficits. This resulted in a 25% drop in rainfall between 1970 and the end of the 2000s in the region of Thies [1]. The analysis of the deviation from the mean rainfall shows a large temporal variability with coefficients that reach -25 to -30%. (Fig. 1).

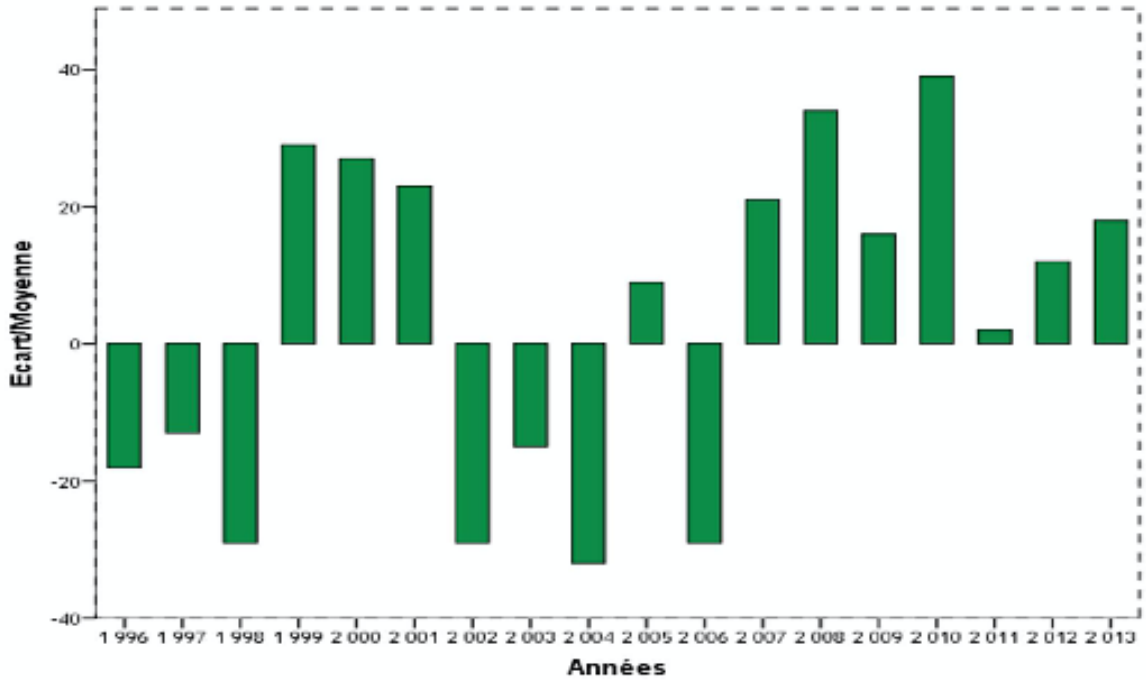

Figure 2. Deviation from the average rainfall in the Thies region basin from 1996 to 2013 (Diallo et al, 2017)[29].

The drop in rainfall during dry years leads to a deficit in surface water, a significant drop in runoff and surface water storage, a reduction in plant cover (high runoff and low infiltration) and the degradation of the entire hydrographic network exposed to progressive silting by water erosion, degradation which persists even in years where there is no rainfall deficit, in particular as a result of water erosion. Rainfall-deficit years have strong repercussions on village productive activities and the rate of vegetation cover.

The city of Thies is located in a basin and is a natural reservoir for runoff water from the Plateau, making it highly vulnerable to water erosion, floods, silting up of old rainwater drainage channels and roads caused by the observed increasing occurrence of extreme rainfalls. Residents report being unable to circulate due to floodwaters, and in some cases unable to leave their homes in the winter (rainy) season due to water[1]. During floods, approximately 19,000 people in the city of Thies (about 4% of the population) live in stagnant water zones, and incidence of diarrhea and skin disorders as a result on contact with wastewater leading to a doubling of consultations at the health centres[2]. During the floods of 2009 in Saint Louis, Kaolack, Thies and Dakar, more than 200,000 people were temporarily displaced and resulted in more than US$103 million in damages and losses.[3] Risks of flooding are further aggravated by human-induced loss of vegetation and the degradation of agroforestry ecosystems, as lack of vegetation accelerates gullying and favors the degradation of the structure of arable soils[4].

Future Climate Scenario

Current data from ANACIM for Thies projects a future (2030-2039) temperature increase of +0.8 C in a moderate scenario (RCP4.5) and +1.2 C in a pessimistic scenario (RCP 8.5), and a decrease in precipitation of 0.2% in a moderate scenario and 0.4% in a pessimistic scenario.

The forecasted increased temperatures, increases in consecutive dry days and shortening of the rainy season will lead to a deficit in surface water, a significant drop in runoff and surface water storage, a reduction in plant cover (high runoff and low infiltration) and the degradation of the entire hydrographic network exposed to progressive silting by water erosion. This degradation persists even in years with no rainfall deficit, in particular as a result of water erosion[5]. Rainfall-deficit years will have strong repercussions on village productive activities and the rate of vegetation cover [6][7], and prolonged dry periods will reduce the soils' ability to infiltrate surface water, contributing to flooding.

The problem this LDCF project seeks to address is the increasing vulnerability of the rural populations in the FBR, and in the area of influence around the City of Thies (hereafter referred to as "Thies"), to the increasing climate variability and the associated risks of annual droughts and floods caused by climate change. More specifically, the FBR population includes rural agropastoralists, whose livelihoods are particularly vulnerable to climate change, due to their dependence on reliable rainfalls for fodder supply and rainfed agriculture. In contrast, the urban population of the City of Thies is heavily impacted by flooding, which disrupts transportation and local commerce. Additionally, the population under the wider area of influence of the City of Thies includes agropastoralists and other natural resources users, which are vulnerable to the changes in rainfall patterns, and whose maladaptive practices may directly impact the flooding in the city. The vulnerabilities of these livelihoods have been significantly exacerbated by the degrading of the ecosystems as a result of climate change and human-induced impacts. In particular, the loss of forest cover to respond to changes in land use have had adverse consequences on the capacity of the ecosystem to provide services such as rainwater supply and quality regulations as well as the moderation of extreme events, critical to address the climate-induced increased occurence of dry years and heavy rainfalls. Urgent adaptive practices, (i.e. forest clearing for agriculture or fuelwood production, use of chemicals, bushfires, overgrazing etc.) adopted by local communities were observed to have further threatened these ecosystems, showcasing a vicious cycle of climate vulnerability.

An underlying **root cause** of maladaptive practices is poverty (up to 45% of inhabitants in some areas of the FBR[8]) that prevents targeted communities to implement longer-term and more protective responses to climate shocks and changes. In addition, current development interventions from the government and technical and financial partners, often fail to associate the introduced adaptive practices to improved livelihoods and revenues, reinforcing the disconnect between sustainable adaptive practices and livelihood enhancement.

The preferred solution is the adoption of an EbA approach through conservation, sustainable management and restoration of the forests and savanna grassland ecosystems in the FBR and in Thies. EbA will sustainably increase the resilience of agropastoral populations in the project areas, by (i) providing climate-resilient green infrastructure that enhances soil water storage, fodder availability and water for livestock; and (ii) developing alternative livelihoods which value is derived from the conservation and maintenance of these local forest and savannah ecosystems (e.g. timber and non-timber forest products, native climate-adapted vegetable gardens, eco-tourism). In addition, introduced climate-resilient green infrastructure (i.e. well-managed forests, natural earth berms, weirs, basins) will provide physical barriers against climate change-induced increased erosion and extreme weather events, particularly flooding. The theory of change is illustrated in Annex D.

However, the adoption of an EbA strategy in the FBR and Thies has been hindered due to the following barriers:

· Barrier#1: **Data on the economic value of functional ecosystems and natural resources are limited and regional public sector institutions do not have sufficient technical capacity to implement EbA interventions.** Empirical knowledge and experience about the environmental and economic benefits of an EbA is not available to support the decision-making at the regional and local level and the funds allocated to the management of these resources in national budgets and the private sector are insufficient to enable large-scale investment in an EbA program;

· Barrier#2: **Past interventions in the project areas adopted a siloed approach that did not link restoration and conservation activities with economic incentives for local populations**. While the Government of Senegal, with the support of technical and financial partners, implemented restoration and conservation activities over the last three decades (including managed reforestation, establishing no-go areas etc.), there was a lack of coordination between actors and stakeholders. Restoration and conversion activities were not associated with evident economic value to those depending on the resource area, therefore the activities were not offering clear incentives for their sustainable maintenance. In addition, small producers and other users of natural resources have a limited knowledge of the climate change drivers/threats and the benefits of restoration and conservation;

· Barrier#3: **The communities have limited financial resources which they use to respond to immediate climate threats (floods and droughts) and are unwilling or unable to take financial risks to invest in or adopt alternative resilient practices.** Adoption of new EbA strategies are not an investment priority for agropastoralists, small producers and other users of natural resources. They also lack access to financial services such as insurance, which could help address the risk that an extreme climate event can result in the loss of the investment;

· Barrier#4: **Lack of an enabling environment for mobilizing private sector investment in EbA interventions, projects and programs for resilient natural assets.** There has been limited investment from international and national private sector in natural resources-based enterprises, as there has not been a systematic analysis of the EbA opportunities and subsequently little promotion by competent national institutions.

1.a.2. The baseline scenario and any associated baseline projects

Baseline scenario

Under the baseline scenario, the agro-pastoral communities of the FBR and in Thies will continue to be characterized by high vulnerabilities and unprecedented precariousness of living conditions and livelihoods, as a result of significant year-on-year climate variability and increases in the intensity and frequency of extreme weather events. For example, the 2002 high mortality of livestock, especially of ruminants and horses was attributed to out-of-season rainfall[9]. Future climate shocks will likely have devastating impacts on crops and livestock, and thehe vulnerability of agro-pastoral communities will be compounded by increasing pressure on natural resources and the degrading of critical ecosystems.

Despite attempts from past and ongoing development projects to address erosion and flooding through green infrastructure innovations for water and soil conservation and soil defense and restoration, these were largely unsuccessful due to the failure to adequately link these interventions with the livelihoods of local communities. Due to climate change impacts and the continuous human- and climate-induced degradation of ecosystems, the decline in the capacity of plant and biological resources to regenerate naturally will continue, along with the accelerated water erosion on the Thies plateau (calculated in 2018 at an average 3487 t/ha/year, which is considered high)[10], and recurrent flooding in the city of Thies[11]. Human activities, including agropastoralism and forestry, will continue to exacerbate these impacts, and in the City of Thies, the tree cover in green spaces, public parks and roadsides will continue to be cut for firewood and animal feed, as well as used for livestock pasture.

Local land management strategies will remain siloed, without fully taking into account the opportunities to link the natural resources to climate-resilient livelihoods. Managers will continue to have limited access to climate data, which will result in a failure to properly value and manage the natural resources and ecosystems.

Since the early 2000s, the agriculture sector has rapidly grown, and horticulture exports have diversified from mainly green beans to now include tomatoes, melons, sweet corn, radishes, and watermelons. The the area under vegetable production more than tripled between 2001 and 2013[12] and agriculture exports grew 10 percent annually to $1 billion in 2017 from $400 million in 2008[13]. Development of non-native horticulture will continue to accelerate, which,

while diversified, remains dependant on climate, which will therefore still leave SMEs and local rural communities vulnerable to climate fluctuations.

In a baseline scenario, Senegal's key commodities of ground nuts (peanuts), rice, meat and millet will continue to dominate, likely achieving short term productivity gains due to ongoing investment[14]. Yields in the groundnut basin, Senegal's main agriculture production zone (which includes Thies), have shown significant year to year variability based on data analysis between 1986 and 2013, and while no clear downward trend has been observed to date, the increase in yields has stagnated[15]. However, projections for 2050 show in the worst-case scenario (-50% in rainfall and +5°C), crop yields could be reduced by 86% compared to current yields[16]. Without adoption of climate-resilient varieties and other EbA measures, year on year variability combined with a predicted downward trend in yields will leave those who rely on these commodities with extremely vulnerable livelihoods.

Over the period 1997 to 2013, Senegalese livestock numbers increased by 38%[17], which in terms of the project areas, saw largest increase in the groundnut basin (incorporating Thies) and only a marginal increase in the Sylvo-pastoral zone (including the Ferlo). It is expected that the economy in the project zones will likely continue to be dominated by livestock products (milk, hides, meat), and agropastoral communities will remain highly vulnerable to the impacts of climate variability on year-on-year fodder availability.

According to the analysis of climate adaptations adopted in the Sahel between 1974 and 2015, income diversification and water harnessing were the most frequent, with 65 types of adaptation interventions identified in Senegal[18]. However, these interventions have not specifically sought to implement climate-resilient activities, and therefore will continue to be vulnerable to climate shocks. For example, diversification of animal species will remain impacted by decreases in fodder availability as a result of the predicted increase in rainfall-deficit years[19], and animal mobility is likely to result in maladaptive practices such as over-grazing, as land use changes and desertification continue to put pressure on grazing areas.

Alternative financing options and long-term financing strategies for adaptation will continue to rely on public funds[20], be it from international or domestic sources, and will not include self-sustaining, climate-resilient value chains.

Externally funded baseline projects

The proposed LDCF project will build on five baseline projects, that share a focus on improving the livelihoods of agropastoral communities and restoring degraded ecosystems. It will build on the baseline activities of these projects using the development activities as the starting point the adaptation strategies, and addressing the barriers to implementing EbA in the baseline project areas: i) limited capacity and lack of understanding of local land management organizations on the economic value of functional and restored ecosystems and natural resources, ii) lack of evidence-based information for ecosystem-based approaches to climate change adaptation, iii) failure to link restoration and conservation activities with the livelihoods / economic outcomes of the local populations, and iv) failure to support business models that incentivize SMEs to change to climate-resilient practices.

The Senegalese Agency for the Reforestation of the Great Green Wall (ASRGM) is a National Government Agency, which has led reforestation activities in eight sites since 2008, as part of the Great Green Wall Initiative (GGWI), a programme implemented in 20 African countries and aims to restore 100 million hectares of currently degraded land by 2030. In Senegal, this included the production of seedlings (nurseries), subsoiling, reforestation, defense building (fodder reserves), the development and maintenance of firebreaks, market gardening, fruit growing and beekeeping in Village Multipurpose Gardens, school gardens and the valuation of wood and non-wood forest products. The ASRGM is both the lead for the GGWI in Senegal as well as the implementing agency for this LDCF project. This will therefore ensure a strong coordination with other ongoing and planned programming under the national and regional GGWI and this project. In particular, projects under the ASRGM in the project areas include fruit tree (jujube, baobab, fig tree) and medical plants reforestation, biodiversity conservation, anti-erosion activities (for improved water infiltration) and capacity building for local governments. As such, activities undertaken under the GGWI in the project areas will directly provide lessons learned to the LDCF project while restoration activities in the FBR will contribute the GGW coverage. The US$ 500,000 investment mobilized from the ASRGM for this project will directly finance activities undertaken in this LCDF project (either through complementary activities in the FBR or by supporting part of the project management costs).

The Project for Sustainable Development of Pastoralism in the Sahel (PDDPS Senegal, 2018 – 2023) with a total budget of about US$ 35.12 million (US$ 30 million from the IDB and US$ 5.12 million from the State of Senegal). The overall objective of the PDDPS is to contribute to the improvement of livestock production in order to increase incomes and reduce food insecurity in the Northern regions (near the FBR) of Saint-Louis, Matam, Louga, Kaffrine and Tambacounda, through better management of natural resources, access to markets and increased control of transboundary livestock diseases. The aim is to sustainably improve the productivity and competitiveness of the dairy and small ruminant sectors, to increase the added value of livestock products and to create jobs, particularly for women and young people. The PDDPS intervenes through three components: (i) development of pastoral infrastructure and natural resource management; (ii) improvement of the milk and small ruminant value chains; (iii) support for institutional and organizational capacity building. These interventions are all considered important groundwork for this LDCF funded project by initiating value-chain activities that will support the interventions under component 3. US$ 4,500,000 will likely be directed as co-financing to this proposed LDCF project .

The Agricultural Development and Rural Entrepreneurship Support Program (PADAER II) for US$ 72.43 million (US$ 46.79 million from IFAD, US$ 10 million from OFID and US$ 9.46 million from the Government of Senegal) (2019-2024). PADAER II will intervene in three agro-ecological zones, including the sylvopastoral zone and more specifically in the Matam region (Matam and Ranerou), near the FBR. Its objective is to contribute to poverty reduction among women, youth and men through their engagement in diversified profitable value chains that are resilient to climate change. The activities related to the supply of agriculture products (irrigation, roads, warehouses) and development of rural and small enterprises for packaging, agricultural machinery and equipment and ploughing services will be important activities for the project to coordinate with, in particular to access sites under the outcome 2 and to produce lessons learned for the value-chain activities under outcome 3. US$ 10,000,000 will likely be directed as co-financing to this proposed LDCF project.

The Emergency Community Development Program (PUDC Phase 2), for a budget of US$ 191.7 million (2019 – 2022) from IsDB, AfDB and the Saudi Development Fund), contributes to the improved access to basic social services in rural areas through the development of socio-economic infrastructure in a number of regions, including Thies and Matam. Specific activities that are considered as a baseline for this LDCF project, in particular the outcome 2, include the establishment of Rural Agricultural Societies, and horticultural perimeters, irrigation equipment, boreholes and drinking water supply, processing equipment, construction of rural roads, and low voltage electricity networks. The lessons learned and capacity-building from this project will likelybe directed as co-financing for US$ 100,000.

Program for the Modernization of Cities (PROMOVILLES), Phase 2 for US$ 151.4 million (2019 – 2025), financed by IDB for US$ 146 million (XAF 81 billion) and a contribution from the State of US$ 5.39 million (XAF 2.95 billion). PROMOVILLES supports the construction of more than 300 km of roads across Senegal. Specific activities that are considered as a baseline for this LCDF funded project are the 9 km of roads constructed in the City of Thies, and the planned mini wastewater pumping station to help control floods in the city of Thies. US$ 10,000,000 will likely be directed as co-financing to this proposed LDCF project .

1.a.3. The proposed alternative scenario with a brief description of expected outcomes and components of the project.

The funded LDCF project will complement the existing baseline by promoting long term planning on climate changes and facilitating budgeting and establishment of innovative financing mechanisms to support climate change governance at communes' levels

The alternative scenario is that the main barriers to adoption of EbA in the FBR and Thies will be addressed, leading to a shift from unsustainable natural resource management practices and climate-vulnerable livelihoods to a sustainable, green economy based on an EbA approach with sound resource management. This will lead to increased resilience of livelihoods for agropastoralists and reduced flooding in the City of Thies.

This will be achieved by anchoring livelihoods in the maintenance of ecosystem services through restoration and conservation activities in the FBR and Thies. This EbA approach – and the delivery of associated goods and services – responds to the increasing climate variability and associated risks of droughts and floods caused by climate change. EbA is increasingly recognized as a highly cost-effective, low-risk approach to climate change adaptation that builds the resilience of communities and ecosystems in the long term.

To achieve these objectives, the project will support the development and implementation of local EbA strategies in the two project zones through (i) the capacity building and strategy development for the management, governance and development of forests and pastures; (ii) the restoration of arid and semi-arid lands and degraded ecosystems; (iii) the development and market access of economically viable Small and Medium Enterprises (SMEs) based on the sound use of natural resources and (iv) dissemination of results, aiming to scale-up the adoption of EbA in Senegal.

Component 1: Developing regional and local governance for climate resilience through EbA

Embedding EbA approaches in the regional and local governance creates an enabling environment that will help secure climate resilient-livelihoods in the FBR and Thies. This requires significant capacity building of key stakeholders to understand the economic value of functional ecosystems and natural resources and strengthening of institutional and regulatory frameworks. While EbA has been recognized as a priority for adaptation interventions in Senegal, limited understanding of the concept and opportunities for local application has resulted in a very restricted adoption of these approaches. At the same time, the accelerating and uncontrolled degradation of critical ecosystems in Thies and the FBR is leading to an exponential loss of the adaptive benefits of these ecosystems. Biodiverse ecosystems provide future adaptive capacity and economic resilience, however the maintenance and restoration of ecosystems has not been embedded in the regional and local strategies designed to adapt to the impacts of climate change (i.e. more intense and less regular rainfalls, increased temperatures or more frequent dry years) which ultimately leads to the increasing climate vulnerability of the communities. Over the recent years, a number of initiatives were developed to introduce climate change concerns into policies and regulatory frameworks and protective measures for critical ecosystems were designed and enforced, but links between improved adaptation and healthy ecosystems failed to be established or systematized in the FBR and Thies.

By introducing EbA concerns into regional and local governance priorities, as informed by the assessments to be conducted under this component, and the lessons learned from outcome 2, the approach under Component 1 will reduce the impacts of climate change-induced heavy rainfalls and dry years exacerbated by land degradation, and as such contribute to the project objective. The activities under this component will also be informed by the results of ongoing interventions such as the *Great Green Wall initiative*, and lessons learned from the recently closed GEG-LDCF project "*Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions (PRGTE)*" as well as the studies supported through the GEF-LDCF '*Senegal National Action Plan*' project.

An assessment of the strengths and weaknesses of the FBR and the Plateau of Thies governing bodies (output 1.1.1) – including stakeholders in Silvipastoral Reserves and Pastoral Units (UPs), forests, Wildlife Reserves and Community Natural Reserves (RNCs) – will be conducted to better understand the barriers to the introduction of climate change adaptation in rural and urban settings, in particular EbA practices, into planning and budgeting. As part of the PPG stage, more in-depth analysis of the gaps, root causes and opportunities will be undertaken to guide the assessment. In addition, existing local committees will be reinvigorated, strengthened and where appropriate re-structured to enable climate-resilient governance and participatory consultation processes for better decision-making (output 1.1.2).

Based on the assessments conducted under output 1.1.1, training sessions will be organized (output 1.1.3), targeting local land-management bodies and key stakeholders (land managers, local authorities, local elected officials, pastoralists, farmers, local organizations and NGOs) in the two project areas, including and in coordination with those involved in the five baseline projects. The training will focus on building an in-depth understanding of the existing and potential

climate change adaptive capacity provided by biodiversity and ecosystem services in the project zones, the potential economic value of climate-resilient livelihoods linked to these ecosystem services, as well as the importance of integrating community and cultural buy-in to the development of green infrastructure and alternative livelihoods.

A multi-stakeholder committee of technical experts will be set up (output 1.1.4) , including experts from various institutions and national and international networks to advise and support local land management organisations in mainstreaming the EbA approach into local adaptation policies and strategies, as well as into the baseline projects. It will also support the development of key indicators for the assessment of climate vulnerabilities at local level and will strengthen local capacities to implement standardized monitoring protocols. Support for observation and dissemination of climate data will enable science-based management decisions (output 1.1.5). This will include the procurement of equipment and measuring instruments to strengthen the early warning system of the Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM) in the target project areas.

Based on the different assessments and capacity building, and following a participatory approach, land use and management plans will be reviewed and updated to incorporate EbA approaches (output 1.1.6). More specifically, the EbA actions will be based on (i) extensive consultations with stakeholders at the regional and local levels, (ii) climate change vulnerability assessments of the biodiversity, ecosystems and local communities (socio-economic vulnerability) including the surrounding gazetted forests, as well as green spaces within the city, (iii) climate data (ie. rainfall, temperature and other weather data) made available to stakeholders, using data provided by national institutions such as ANACIM and (iv) the Market Analysis and Development (MA&D) framework results set out in Component 3. These local resilience strategies will include activities to build the resilience of livelihoods, as linked to the ecosystem services provided through restoration and conservation of the ecosystems and biodiversity. These will be developed, adopted and implemented with the continuous engagement of local communities in the sustainable management of natural resources.

These activities above all involve a degree of stakeholder engagement and meetings. If the COVID-19 pandemic is still impacting project activities at the time of execution, then alternatives to in-person meetings will be explored, including introduction of technology as well as an up-front focus on capacity building of local leadership.

Outcome 1.1 Stakeholders' capacities in planning and implementing EbA to maintain and/or create climate-resilient natural capital are strengthened.

Output 1.1.1. Functional analysis of the key institutions to formulate and enforce EbA policies conducted;

Output 1.1.2. The participatory governance bodies of the FBR and the Plateau of Thies are restructured/revitalized and strengthened for better coordination of decision-making in response to climate change risks;

Output 1.1.3. Stakeholder training programs are conducted to instill the skills and knowledge for climate-resilient decision-making;

Output 1.1.4. A technical expert committee is set up to advise on the mainstreaming of EbA into local land management strategies;

Output 1.1.5. The EWS under the ANACIM is equipped to strengthen the observation and dissemination of climate data in the project areas

Output 1.1.6. Land use and management plans are reviewed and updated on the basis of participatory consultations to mainstream the EbA approach within regional and local regulations, policies and systems of decision-making

Component 2: Restoration and conservation management to increase resilience of natural assets and ecosystem services

By implementing restoration and conservation in the FBR and Thies, the climate resilience of natural assets and ecosystem services will be ensured. This component will be implemented in coordination with the creation of the enabling environment under component 1, to provide empirical knowledge, drawn from experience in the project's targeted restoration natural ecosystems and productive areas. Experience under component 2 will inform and strengthen land use and management plans as well as the training programmes for local and regional stakeholders. This accumulated knowledge will respond to barrier #1, which identified a lack of data on the economic value of functional ecosystems and natural resources. In turn, Component 1 is expected to facilitate the replication of practices beyond the specific project sites and ensure the monitoring and advisory capacity of key stakeholders, avoiding the reintroduction or continuation of malpractices.

Currently EbA is quite nascent in Senegal, with some projects supporting the restoration of forests, watersheds, etc. as well as other practices associated with EbA. However, these initiatives rarely refer to EbA, and focus more on the broader protective benefits of these interventions, consequently failing to integrate climate change adaptation aspects. This is the case for the "*Great Green Wall*" initiative, which is led by ASRGM and includes the FBR: it aims to strengthen the capacities of local communities to help boost investments in land restoration and created employment opportunities or 'green' jobs but does not specifically address ecosystem based adaptation approaches. Similarly, the project "*Management of the ecosystems of the Plateau of Thies*" (which will end in 2021) has focused on water management and erosion, without linking to EbA or adapted livelihoods. While in the short-term the benefits appear to be comparable, the lack of understanding of the climate-change driven impacts on livelihoods and natural landscapes can be problematic and restrictive in the longer term. Therefore, as the project implements EbA practices, an emphasis on climate change awareness needs to be made.

This component will support the direct restoration of forest and rangelands over 5,000 ha to ensure these natural landscapes and productive areas are made more resilient to the expected increasing adverse impacts of climate change. An additional 245,000 ha of land in the Wildlife Reserve of Ferlo Nord and the Wildlife Reserve of Ferlo Sud, and the protected Forest of Thies will be put under improved sustainable management to maintain adaptive ecosystem services in the context of climate change. This will include (i) reforestation, re-vegetation and assisted natural regeneration (ANR) of arid and semi-arid lands and degraded ecosystems with climate resilient plant species that provide goods for consumption and/or marketing; (ii) restoration of soil and vegetation cover, to preserve adaptive ecosystem services and (iii) sustainable land management measures engaging local communities, including with the adoption of climate-resilient crop varieties, demarcating multi-stage production plots by defensive quickset hedges, the use of organic fertilizers, sustainable NTFP harvesting practices, methods for improved processing, packaging, storage and marketing practices for transformed products. The role of IUCN, as both a GEF agency for this project and an expert in conservation, will be key to ensure social or environmental safeguards risks are controlled and are not triggered during the implementation of restoration activities, especially in the FBR. In addition, by concentrating restoration activities only in the "transition zone" of the FBR, instead of the "conservation areas" or the "buffer areas", safeguards risks will be minimized. The restoration activities in the FBR will also directly contribute to the GGWI, as it is located in the same zone and both are led by ASRGM.

Restoration and conservation activities will take into consideration the potential for improved access to water resources by pastoralists as a result of forest and rangeland restoration, taking into account extreme weather events and rainfall variability. This is expected to include installation of infrastructure using essentially natural materials such as for bunds, embankments, weirs, earth dams and other water management structures (output 2.1.3)..

Improved access to water resources (output 2.1.2) will form a key part of the EbA strategy in both project areas as it is expected to reduce the reliance of farmers on increasingly unreliable rainfalls as a result of climate change. Indeed, during the droughts in the 70s and 80s in Senegal, poor and unreliable access to water was observed to lead to increased deforestation to compensate for the reduced productivity of existing croplands. Safe access to water is therefore critical for the protection of forests and other highly productive ecosystems and will be included in the assessments and strategies formulated in Component 1.

An anti-erosion scheme for the area of the Plateau of Thies that affects the City of Thies will be developed and implemented (output 2.1.4). This includes restoring the surrounding native forest ecosystems, as well as other water management measures to reduce erosion, gullying and flooding exacerbated by rainfall variability and extreme weather events as a result of climate change, and in turn reduce the vulnerability of the population in the city of Thies.

Finally, this component will support the restoration of a green belt by replanting khaya senegalensis and other endemic trees alongside roads and in public green spaces (output 2.1.5.) for drainage control and the reduction in hydrological disaster risks, thus reducing flooding from extreme weather events in parts of the City of Thies, and decreasing the population's vulnerability to these climate change impacts. In particular, this output could be conducted in partnership with the phase 2 of the "*Program for the Modernization of Cities (PROMOVILLES)"* that intends to support the construction of roads across Senegal, including around Thies, to improve the connectivity to poorly connected areas.

In the context of COVID-19, experience to date of other restoration and planting programmes which took place during the first stages of the pandemic have shown that it is still reasonable to undertake these: research suggests that the risk of infection is lower outside, and when measures such as mask-wearing and hand-washing take place. Therefore, it is expected that these activities could still be implemented, though may be delayed in the case of a full lockdown or if significant numbers of workers become ill.

Outcome 2.1 Agropastoralists' livelihoods, natural ecosystems and productive landscapes in project sites are more resilient to climate change through the adoption of EbA practices.

Output 2.1.1. Degraded agropastoral rangelands (including pastoral routes) are regenerated

Output 2.1.2. Degraded FBR agropastoral ecosystems are restored using nature-based solutions;

Output 2.1.3. Green infrastructure (i.e. bunds, embankments, weirs, earth dams) will be installed to sustainably improve access to water resources for local producers

Output 2.1.4. EbA measures are implemented on the Plateau of Thies to reduce flooding in the city of Thies.

Output 2.1.5. A programme to restore a climate-resilient green belt is implemented in the commune of Thies

Component 3: Investment in climate-resilient value chains

Through the creation and strengthening of viable SMEs that rely on biodiversity and ecosystem services, this component seeks to establish climate-resilient value chains. Currently, local communities do not have the resources to move away from their traditional livelihoods to adopt more climate resilient and protective EbA practices (barrier#3). In addition, as noted above, there is limited documented and disseminated EbA practices in the project areas and in Senegal more broadly. This lack of evidence limits the incentives for local populations to invest in restoration and conservation activities in order to improve their livelihoods in the long-term (barrier#2). This component, together with the governance incentives established under component 1 (policies, support from existing structures) and the lessons learned capitalized and disseminated under component 4, will promote private sector investment in relevant value chains (outcome 3.1) and support local entrepreneurs and SMEs to produce goods and services based on the sustainable use of natural resources (outcome 3.2).

More specifically, target value chains will include agricultural production (field crops, market gardening, arboriculture, fodder crops), forestry (timber and non-timber forestry products), and other economic activities as will be further detailed out during the feasibility studies of the PPG phase. At this point, significant potential has been identified for the development of forest value chains using species such as: Balanites aegyptiaca, Acacia Senegal, Adansonia digitata, Ziziphus mauritiana and Boscia senegalensis (ndiandam). By including the dual focus on private sector investment and support for SME development, this component will ensure market demand and economic viability for these climate-resilient value chains is embedded in the approach. This component will also

build on experiences and lessons learned from multiple ongoing initiatives such as "*The Agricultural Development and Rural Entrepreneurship Support Program*" and the second phase of the "*The Emergency Community Development Program (PUDC)*". The GEF-LDCF project "*Promoting innovative finance and community-based adaptation in communes surrounding community natural reserves (PFNAC)*", intervening in the Ferlo, will also implement critical activities on which this project can build, in particular in terms of access to credit for vulnerable smallholder farmers.

Under this component, and to respond to the gaps and contribute to the initiatives presented above, a private sector platform will be set up to better coordinate value-chain activities promoting EbA (output 3.1.1), with the objective of identifying existing and new business opportunities and facilitating market linkages for nature-based products that provide adaptive benefits. Following the MA&D framework, opportunities will be identified by (i) assessing the existing situation, (ii) identifying products, markets and means of marketing and (iii) planning for sustainable development.[21] IUCN, as both a GEF agency for this project and an expert in conservation, will advise on the identification of opportunities that are compatible with the protection of the FBR. As for the component 2, all economic activities supported in the FBR are expected to take place in the 'transition zone' of the reserve, where natural resources can be harvested following precise standards and regulations already defined and enforced. Regional, national and international private sector players will be engaged through the platform, with the objective of coordinating value chain activities through identification of investment opportunities in material sources (livestock, forestry products, food, pharmaceutical and cosmetic ingredients), improvements in existing supply chains (reduction in post-harvest losses, aggregation and bulk storage, new / improved processing facilities, cooling chain improvements), or the investment in improved agricultural practices leading to increased yields.

In addition, a strategy will be developed to catalyze private sector investments in natural resource SMEs (output 3.1.2). This will include the organisation of forums for private sector stakeholder to exchange ideas and discuss common interests and potential opportunities. A publicly accessible database will also be developed to compile, organize and share identified opportunities and benefits from investment in the sustainable use of natural resources in the two project areas. This platform will both be used to lead discussions during forums and be updated based on the results of these encounters. The approach may need to be adapted to online forums, if COVID-19 measures prevent large meetings.

Local entrepreneurs, community organizations and SMEs, in particular women- and youth-led businesses, will also be directly targeted under this component with the set-up of business incubation schemes (i.e. structured support programmes that recruit and support participants) to develop and commercialize products based on the sustainable use of natural resources (output 3.2.1). The incubation schemes will serve as a platform to support local entrepreneurs and SMEs to adopt innovative practices, strengthen their managerial, entrepreneurial, and business management skills, education on saving, support in drafting business plans, and identifying potential national, international and multilateral financing mechanisms to support investments in EbA and on the sustainable use of natural resources. SMEs supported by these activities will be subject to a risk assessment to ensure environmental and social safeguards are met. This is expected to be delivered by teams located in the field, and in the context of COVID-19 team members may have to limit movements between regions (especially between Thies and the FBR), and as part of the PPG phase, options will be reviewed for how to set-up the incubation programme to reduce the risk of delay if key personnel cannot travel or are infected. The development of the nature-based businesses will further have to take into account the impact COVID-19 had on market demand and seek opportunities that are both climate and pandemic resilient.

Finally, the project will equip local SMEs with infrastructure and resilient materials for the adoption of climate-adaptive activities (establishment of nurseries, village multi-purpose gardens, fodder reserves and integrated model farms) as well as relevant agriculture and forestry equipment that support EbA (output 3.2.2).

The adoption of new adaptive practices and alternative climate-resilient livelihoods will be incentivized through financial services (output 3.2.3) such as micro-credit and insurance products, to reduce climate-related financial risks, e.g. crop failure due to extreme weather events. Innovative financing may include for example development of financial products specific to climate-resilient SMEs, provision of both short and long term (micro) finance, flexible payment terms

linked to cash flow, risk-based credit scoring and ICT data capture, alternative collateral and guarantee options, group lending, financing via downstream buyers, and risk sharing between Multi-lateral Finance Institutions (MFIs) and national banks. institutions. The GEF-LDCF project led by UNDP PFNAC, intervening in the Ferlo, is in the process of setting up innovative and sustainable finance mechanisms, and is working to improve the capacity of local credit and saving mutuals to finance adaptation projects, both of which have strong potential to directly benefit the SMEs supported under this EbA project. These activities will depend on coordination with the UNDP project as well as the development of partnerships with the National Agricultural Insurance Company of Senegal (CNAAS) and other national, multilateral and international financiers. Furthermore, access to pricing information, marketing and commercial transactions of nature-based products will be facilitated through mobile phones, in a partnership with SONATEL (the leading telecommunications company in Senegal).

Outcome 3.1. Private sector investment in value-chains producing goods and services based on the sustainable use of natural resources in a climate change context.

Output 3.1.1. A private sector platform is set up to better coordinate value-chain activities that promote EbA;

Output 3.1.2. Stakeholder forums are organised to catalyse private and public sector investments towards the creation of resilient natural capital;

Outcome 3.2. Local entrepreneurs and SMEs produce goods and services based on the sustainable use of natural resources

Output 3.2.1. The managerial and entreprenarial capacity of local entrepreneurs, in particular women and youth, are supported to develop and commercialize products based on the sustainable use of natural resources, taking into account climate change

Output 3.2.2. SMEs based on the sustainable use of natural resources are provided with equipment (i.e. for the establishment of nurseries, village multi-purpose gardens, fodder reserves and integrated model farms) and agriculture and forestry inputs.

Output 3.2.3. SMEs based on the sustainable use of natural resources are provided with training to access financing opportunities to promote the adoption of resilient practices that protect and conserve targeted ecosystems

Component 4: Knowledge management, and monitoring and evaluation

This component seeks to secure the long-term adoption of climate-resilient approaches within the two project zones, as well as laying the foundation for scaling up EbA in Senegal. This is achieved through use of the M&E data and lessons learned from the first three components to develop a strategy for scale-up. This knowledge will be particularly relevant to inform planning and budgeting at the local, regional and national levels and for the continuous capacity building of stakeholders to support the scale-up beyond the life of the project. While this component is preparing the exit strategy of the project by capitalizing the knowledge acquired in the three first outputs, the activities will be carried-out all along the project implementation. More specifically, the following outputs will enable the replication and upscaling of EbA practices at the local and national level:

ASRGM, the city of Thies, UNDP, IUCN and technical partners will provide training and assistance to the project team and local and regional actors to develop a Monitoring and Evaluation (M&E) plan, including a set of indicators, data collection and processing protocols to categorize, document, report and promote lessons learned at national and international levels (output 4.1.1). The M&E mechanism will put communities at the heart of participatory research processes.

In addition, a communication strategy will be developed to collect, analyze, compile and disseminate the theoretical concepts of EbA (including from outside the project areas and Senegal) as well as practical results of project activities to relevant national, regional and local stakeholders (output 4.1.2.). The strategy is expected to build an institutional memory on the opportunities for EbA to enhance the climate change resilience of biodiversity and the livelihoods of local

communities in the two project areas, amongst targeted stakeholders including the local authorities, local elected officials, pastoralists, farmers, local organizations and NGOs and managers of the Wildlife Reserves, Community Natural Reserves (RNCs), Silvipastoral Reserves and Pastoral Units (UPs) and forests of the FBR and Plateau of Thies.

An online platform will be developed as a repository of project results, training, tools and initiatives for experimentation and demonstration of pilot actions, and the results of the project will be disseminated at local, national and sub-regional levels through a number of existing networks and forums. At the end of the project, a national forum, gathering all technical and financial partners as well as the actors involved, will be organized. Building on the results from the forum and discussions , a guidebook/manual will be produced to disseminate the achievements, difficulties, lessons learned and good practices for the implementation of EbA in the project areas, to facilitate the replication of the results (output 4.1.3). If the COVID-19 pandemic is still impacting the project activities at the time of execution, then an alternative approach to a national forum will be developed, which could include several smaller regional meetings restricted in size (in case of travel restrictions between meetings), broadcasting presentations on TV or through meeting software or other approaches that reduce travel between areas and close contact.

A strategy for scaling up EbA approaches and developing natural resource-based SMEs will also be developed, including long-term financing options (output 4.1.4). This strategy will include approaches for developing climate-resilient natural resource-based SMEs, using the M&E results and lessons learned from implementation of the project, and will set out key recommendations for mainstreaming the approach in other regions in Senegal.

Outcome 4.1 Relevant local and national stakeholders incorporate climate-resilient EbA approaches into their land management activities, drawing on the experience from the FBR and Thies.

Output 4.1.1. An M&E plan, including a set of indicators, and data collection and processing protocols, is developed and implemented;

Output 4.1.2. A communication strategy aimed at the relevant local and national stakeholders is developed and implemented

Output 4.1.3. A summary and dissemination document (report, manual or guide) of the project outcomes, lessons learned and good practices is produced and disseminated;

Output 4.1.4. A strategy for scaling up the EbA approached and developing natural resource-based SMEs, including long-term financing options, is developed and the implementation of key recommendations is supported.

1.a.4. Alignment with GEF focal area;

The project is in line with the programmatic framework of the LCDF, which has a goal to: *"Strengthen resilience and reduce vulnerability to the adverse effects of climate change in developing countries and support their efforts to enhance adaptive capacity")[22]*. Specifically, the project will contribute to the achievement of the strategic objectives of the LCDF:

CCA-Objective 1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation. Under component 1, innovation through the institutional development of land governance in the FBR and Thies, will enable effective mechanisms to implement EbA actions, as well as the establishment of stakeholder engagement mechanism with local governments, the private sector, and civil society organizations (as per GEF/LDCF.SCCF.24/03, paragraph 51). Component 3 includes the provision of systemic support to innovation through business incubation, piloting financial tools, risk transfer mechanisms, including risk insurance, and other risk sharing solutions, and strengthening private sector engagement in adaptation (as per GEF/LDCF.SCCF.24/03, paragraph 53). As per the LDCF CCA-1 priorities, component 3 will focus on initiatives with local private actors and micro, small, and medium enterprises and seek to engage women and small-scale and young entrepreneurs with the aim to improve livelihoods, while increasing their resilience to climate change.

CCA-Objective 2: Mainstream climate change adaptation and resilience for systemic impact. All Components are based on the principle of mainstreaming adaptation through the application EbA – linking biodiversity and conservation to diversifying livelihoods and improving water management. The project includes alignment of joint programming with the Great Green Wall Initiative, a project that addresses cross-cutting themes of adaptation, mitigation, land degradation, and sustainable development: the Lead Implementing Partner for this LDCF project is the ASRGM, the national agency responsible for implementing GGWI. Additionally, in Component 3 national and international private sector actors have been identified as potential mainstreaming partners for climate-resilient nature-based products, and the National Agricultural Insurance Company of Senegal (**CNAAS**) is also expected to be a key partner in mainstreaming risk insurance as an incentive for adaptation of EbAs by SMEs.

The project is also aligned with the LDCF GEF-7s target of '**enhanced private sector engagement'**, including Pillar I: Expanding Catalytic Grant and Non-Grant Investments (in Component 3 though the support of entrepreneurship development and incubators, to create and seize emerging private sector opportunities to reduce climate change vulnerabilities, and in Component 2 and 3 enhancing small-holder farmers' knowledge of climate impacts and available adaptation approaches), and Pillar II: Support enabling environments for the private sector to act as an agent for market transformation (in Component 3 exploring strategic partnerships with private companies in developing countries to accelerate the, and through risk insurance facilities).

1.a.5. Additional cost reasoning and expected contributions from the baseline, the LDCF, and co-financing;

In the baseline scenario, despite existing investments, development and land management / restoration projects fail to adequately link ecosystem services to resilient livelihoods. The co-financing is a combination of ongoing project activities that are already funded and serve as a baseline for adaptation activities covered in this project, as well as cash and in-kind contributions specifically made to support the implementation of this project. The co-financing from baseline projects will be secured in the PPG phase through written confirmation with project owners.

Component 1 – Developing regional and local governance for climate resilience through EbA

With LCDF resources, the stakeholders involved in the baseline projects, as well as the local natural resource managers of the Wildlife Reserves, Community Natural Reserves (RNCs), Silvipastoral Reserves and Pastoral Units (UPs) and forests of the FBR and Thies will have the capacity to understand and apply EbAs in their programming and land management strategies. Access to climate data will be provided to these local resource managers and governance structures, to support science-based decision-making. The updated strategies, incorporating EbA, will lead to more resilient livelihoods and link climate-resilient economic activities to the maintenance of ecosystems. This strengthening of local governance to integrate EbA into planning will add value and opportunities for all baseline projects – especially those that include capacity building of local governance structures (*Project for Sustainable Development of Pastoralism in the Sahel* and *The Emergency Community Development Program*).

The indicative co-financing from the baseline projects for Component 1 is USD **$ 2.6 million**. This is calculated from the baseline activities in the *PPDPS,* with the capacity building and strengthening of local governance undertaken in Thies and the FBR (US$ 2.1 million), as well as cash contributions from UNDP and ASRGM totaling $500,000.

Component– 2 - Restoration and conservation management to increase resilience of natural assets and ecosystem services

With LCDF resources, the vulnerability of agropastoral communities in the FBR and Thies will be reduced through the restoration of land and ecosystem management. Restoration of these ecosystems will help maintain valuable ecosystem services, especially at the level of the Thies Plateau, where CES/DRS activities will help to combat recurrent flooding in the city of Thies. The restoration of these two ecosystems will also provide additional climate-resilient livelihood opportunities, which is set out under Component 3. Specifically, LDCF resources will be used to restore approximately **5,000 ha** degraded pastures and forests in the FBR and Thies. This will provide additional value and opportunities to the beneficiaries of the *Project for Sustainable Development of*

Pastoralism in the Sahel, increasing their resilience through wider fodder availability and reduced pressure on resources. In Thies, the new roads built under the *Program for the Modernization of Cities* will be transformed into green vectors of water retention, helping reduce flooding and moderate local temperatures.

The indicative co-financing from the baseline projects for Component 2 is USD $ 12.5 million. This is calculated from the baseline activities for ecosystem restoration in the *PDDPS* (indicative $2.4 million), the *PUDC (Phase 2)* (estimated $100,000) and the *PROMOVILLES (Phase 2)* building new roads in Thies (US $10,000,000)

Component– 3 - Investment in climate-resilient value chains

With LCDF resources, community organizations and local entrepreneurs, in particular women- and youth-led businesses, will develop and commercialize products based on the sustainable use of climate-resilient natural resources. In the FBR, baseline projects include work to support alternative livelihoods, including the *GGWI* implemented by ASRGM, *The Project for Sustainable Development of Pastoralism in the Sahel*, *The Agricultural Development and Rural Entrepreneurship Support Program*, and *The Emergency Community Development Program (PUDC Phase 2)*: the additionality of this LCDF funding will be to link the development of alternative livelihoods to ecosystem services and climate resilient, nature-based products, including the restoration activities undertaken in Component 2. In Thies, the activities already undertaken under the *Project for the management of the ecosystems of the Plateau of Thies* and the *Local Governance Project for Adaptation and Resilience to Climate Change,* which focus on the technical solutions to control erosion and restoration of land, will be enhanced by linking the maintenance of newly planted areas and assisted natural regeneration with local livelihoods. The LCDF funding will also be used to set up business incubation programmes for climate resilient natural resources, including market analysis, entrepreneurial training, links to private sector supply chains, and access to insurance and micro-finance. The insurance and micro-finance activities will seek to use the results of the GEF-LDCF *PFNAC* project to incentivize adoption of climate-resilient value chains, thus creating additionality and adaptive impact.

By creating a private sector platform and market linkages for climate-resilient natural resources, beneficiaries of the baseline projects (particularly *The Agricultural Development and Rural Entrepreneurship Support Program)* as well as other stakeholders in the project areas will have an added incentive to pursue development of nature-based SMEs. Furthermore, this LCDF project will seek to link the distribution of solar generators by COSEER and the rolling out of mobile telephone payments and market pricing information by SONOTEL to climate-adapted alternative livelihoods.

This component is additional to the baseline, as it specifically focuses on creating an enabling environment for commercial EbA value chains, which will contribute both to reducing poverty and to reducing the vulnerability of smallholders to climatic and economic shocks.

The indicative co-financing from the baseline projects for Component 3 is US $ 10.7 million. This is calculated based on expected cash grants from COSEER ($200,00) and SONOTEL ($500,0000) for this component. In addition, project activities under the *PADAER II* will provide inputs and services that can be used by the nature-based SMEs supported in this LDCF project, specifically with the supply of agriculture products, irrigation networks, roads, warehouses and development of rural and small enterprises for packaging, agricultural machinery and equipment and ploughing services.

Component 4 - Knowledge management, and monitoring and evaluation (M&E)

In the alternative scenario made possible by LCDF funding, the implementation of alternative and innovative practices will allow the testing of the EbA, and the creation of knowledge management products which will facilitate wider uptake across Senegal and other regions. It is expected that the business cases developed for climate-resilient natural resources will be particularly valuable, as well as sharing the structure and content of the business incubation schemes. The objective would be for the learnings on EbA and adaptation opportunities to be adopted by the baseline projects, as well as more widely.

The indicative co-financing from baseline projects for Component 4 is US $ 150,000. This is calculated from cash contributions from UNDP and ASRGM.

In addition, US$500,000 of cash contributions are expected from UNDP and ASRGM to complement project management costs, including with the provision of office space, vehicles or contribution to staff costs.

1.a.6. Global adaptation benefits (LDCF)

ıble The ecosystem restoration measures for pasture rangelands and forests in the project areas include re-planting of native species and infrastructures using natural materials of water retention and storage, and will contribute towards (i) increased soil water retention, (ii) increase in biomass, (iii) storage of atmospheric carbon, (iv) decreased erosion and loss of arable lands, (v) decrease of flooding events, (vi) decreased sediment load in rivers and silting of river beds. These ecosystem services are the foundation of the adaptation benefits delivered by this project. Indeed, the project proposes to restore at least 5,000 Ha of land, including pasture rangelands, as well as forest and wooded areas in the transition zone of the FBR and in and around Thies. This will be a combination of replanting native species, assisted natural regeneration and building green infrastructure to facilitate water and soil retention. These restored lands, as well as existing ecosystems, will form the basis of the EbA nature-based business models supported through the project. The strengthening of local EbA governance and support for development of nature-based SMEs covers a wider area of influence, including the 242,564 ha wildlife reserve, 1,156,633 ha of buffer zone and 659,019 ha of transition zone, as well as the region of Thies, which covers 667,000 ha. It is estimated that 300,000 households will directly benefit from these activities.

In addition, adaption benefits will also result from the strengthening of local capacity and governance for the restoration and maintenance of economically useful ecosystems. Specific adaptive benefits are estimated to directly benefit 10,000 households (50% women) in particular through (i) maintained or increased livestock productivity (through fodder and water availability), (ii) new income-generating EbA opportunities, including agroforestry and tree crops which will increase the resilience of local communities by providing a diversity of fruits, nuts, medicines[1], fuel, timber, nitrogen fixation services, fodder, and habitat, and (iii) opportunities for recreation and ecotourism development. The ecosystem services of water retention and flood impacts reduction will also be a key contributor to the resilience of these adaptive livelihoods.

1.a.7 Innovation, sustainability and potential for scaling-up

Innovation: EbA re-frames biodiversity and ecosystems in terms of their economic value for humans, bringing together often-siloed strategies of conservation and livelihoods. This approach has not yet been systematically adopted or promoted in Senegal and has significant potential to transform existing development projects into climate adaptation activities, within the project areas and beyond.

The establishment of business incubation schemes will seek to foster local innovation, and support entrepreneurs to access markets and micro-finance. Given the challenges with accessing finance, noted by the World Bank and IFC as a major constraint for private sector firms, and micro, small, and medium enterprises (MSMEs) in Senegal [24], innovative financing notably through insurance and micro-finance will be developed in coordination with national and international finance institutions, to develop relevant products and bring in development finance to reduce the risk to lenders (output 3.2.2). The introduction of mobile phone payment systems in the project areas will help further facilitate new supply chain relationships.

Sustainability: To ensure the sustainability of project impacts, key local stakeholders will be engaged throughout the project to ensure long-term local ownership of EbA concepts. Engagement will be through a multi-stakeholder committee of technical experts set up at the start of the project (Component 1), as well as ongoing communication and consultation with local communities, local governance and resource managers, private sector and other key interested / affected parties (Component 4).

The management and implementation of the project by the ASRGM, a national government agency, will also help ensure the institutional sustainability of the interventions and will increase the likelihood that the capacity built through the project will be maintained and shared, and investments in building institutional capacities will be made through Component 1.

An iterative learning approach from project design through to implementation will be adopted, initially building on the lessons learned from the baseline projects and related projects to inform the implementation of the restoration activities and business incubation of nature-based livelihoods. This iterative approach will continue throughout the implementation of project activities, allowing for adaptive management, in particular following changes in context and to incorporate new learning, key and active local stakeholders, experts and scientists (drawing on the committee of technical experts). The adoption of adaptive management along the project implementation will ensure challenges faced during the implementation can be addressed after the project ends with the set-up of adequate systems or the improvement of EbA techniques and practices. In particular, this will allow for the improvement of trainings for stakeholders responsible for the monitoring of project interventions, to be capacitated to address technical failures or improve the practices in the case of changes in the environmental or social conditions. This will also enable adjustments in the EbA practices introduced when their actual implementation does not result in the expected benefits. As mentioned in the baseline, there is only limited experience in terms of EbA in Senegal and the design of the project might face some knowledge gaps that will be filled as the implementation is carried out.

Emphasis will be placed on building stakeholder trust by pro-actively seeking their inputs as part of the analysis and strategy development in Component 1, which will then be implemented through restoration activities (in Component 2) and support for development of natured-based SMEs (in Component 3). This may need to be done by telephone and/or using a network of local trusted advisors to engage with stakeholders, if COVID-19 is still impacting activities at the time of execution.

The business incubation of nature-based SMEs (in Component 3) will emphasize the development of commercially viable independent businesses, providing coaching and technical training for local entrepreneurs, as well as setting up linkages with national and international private sector value chains, to ensure the businesses continue to exist beyond the end of the project. Further, it is planned to set up partnerships with micro-finance institutions to enable the financing of SMEs during and after the project, which is a key to sustainability.

Scale-up: While targeting activities in the FBR and Thies, efforts to scale up the EbA will be implemented. A platform for the collection and dissemination of knowledge, lessons learned, and good practices of the project will be created in order to ensure that they are available to the other regionals in Senegal, local and national governments (component 4).

Specifically, the business cases for nature-based SMEs identified in the project can be pro-actively shared with other development projects in Senegal, as well as with the other Great Green Wall national projects across Africa. The structure and best practices for setting up the business incubators, as well as the content of the coaching and training offered through the incubators, is also scalable.

Barriers to scale-up may include an unwillingness of land use managers or project owners to re-frame their existing strategies – this can be linked to their access to funding, institutional and cultural perceptions of what activities are appropriate or vested interests in maintaining the status quo. Therefore, scale-up will also require a stakeholder engagement strategy to build trust, as well as to understand the barriers. Relevant financial analyses of the overall project investment will be carried out and will be used to inform decision-makers and private sector investors on the potential returns from future investments in EbA programs and projects, through the EbA scale-up strategy (Component 4).

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1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

The two project areas, selected as priorities by the Government of Senegal for the introduction of EbA practices to address climate change impacts, are the FBR and Thies, representing implementation of EbA in both a rural and an urban environment:

The FBR is located in the Ferlo, commonly known as the agro-sylvo-pastoral zone, in northern Senegal between latitudes 14°24' and 16°11'N and longitudes 13°07' and 14°51'W.

The City of Thies, located between latitude 14° 47' 27.618" N and longitude 16° 56' 9.096" W, covers an area of 68.82 km2. It is surrounded to the south by the municipality of Notto-Diobass, to the north and south-east by the municipality of Mont Rolland and the municipality of Fandene with a small opening to the north-west to the municipality of Keur Moussa.

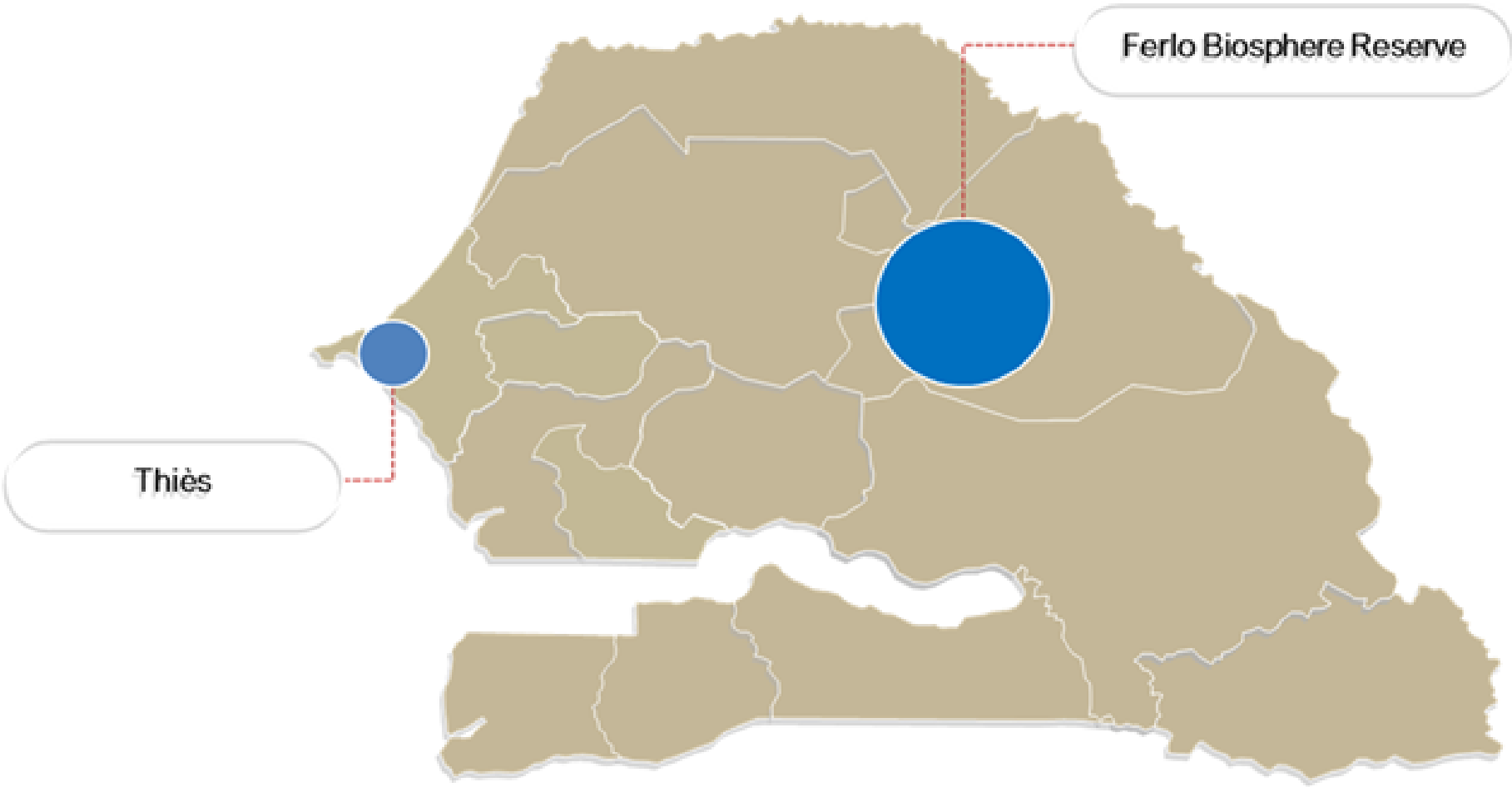
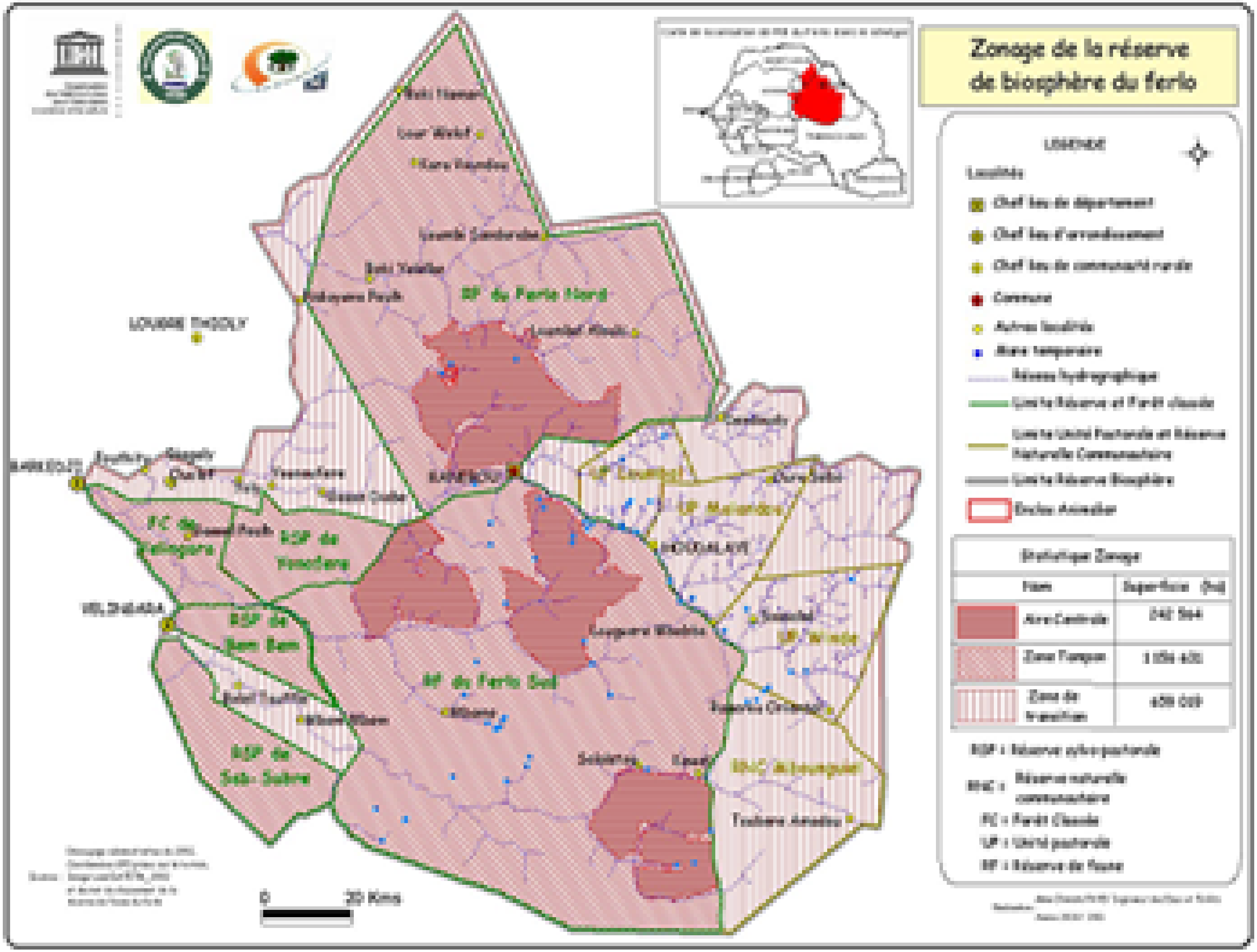


FIGURE 3 MAP OF SEGENAL, SHOWING PROJECT AREAS



Zonage de la réserve
de biosphère du ferlo
RF du Ferlo Nord
RF du Ferlo Sud
0
20 Kms

Figure 4 Map of the Ferlo Biosphere Reserve

Figure 4 Map of the Ferlo Biosphere Reserve

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities

Civil Society Organizations

Private Sector Entities Yes

If none of the above,please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

The development of the PIF was undertaken through a close collaboration between the ASRGM, representatives from the city of Thies, IUCN and UNDP, and took into consideration stakeholder perspectives based on extensive experience in the field. The ASRGM is currently working on implementing restoration projects in eight sites, and therefore is working closely with local communities and civil society organisations. Equally, as a local government entity, the city of Thies has integral contact with local communities, as well as with CSOs as part development projects. IUCN was instrumental in the establishment of the FBR and brought these perspectives of stakeholders as well as lessons learned to the discussions. UNDP maintains extensive networks with CSOs, government agencies and private sector as part of its long-term mandate in Senegal, and specifically engaged bilaterally with private sector companies (COSEER, Laitier du Berger and SONOTEL) on opportunities for collaboration and co-financing. In the context of COVID-19, no wider stakeholder consultations were undertaken as of yet.

An indicative list of stakeholders — and the roles that they will play in project design — is provided in Table 2 below. The stakeholders and their respective contributions and roles in the project will be confirmed during the PPG phase, through a participatory approach with stakeholder consultation and validation for all major activities. The project includes provisions for stakeholder engagement throughout implementation, and specific outputs related to stakeholder engagement - notably a multi-stakeholder committee of technical experts (output 1.1.4), organisation of a platform and forums for private sector stakeholder on private sector investment in EbA (output 3.1.1), and a national forum for dissemination of results (output 4.1.3).

In the context of the current COVID-19 pandemic, Senegal initially closed its international and city borders, significantly limiting travels for national and international consultants, including during the formulation of the PIF. However, restrictions have now been lifted and in-country travels are authorized, and the airport reopened to international flights. The spread of the virus remains relatively low in Senegal and it is currently not expected that another closing of borders will be enforced. We can therefore expect that, during the PPG stage, the COVID-19 context will not impact travels and the conduct of stakeholder engagement activities. Consultations will however be conducted cautiously following the restrictions and safety measures imposed by the government and recommended by health institutions (ie. WHO).

ıble 2: List of potential stakeholders and their possible contributions and roles in the proposed project.

Stakeholder type	Stakeholder list	Possible contributions and roles in the project

~~ype~~		~~e project~~
Government ministries	The Ministry of Environment and sustainable development (MEDD), ASRGM	They will be involved various aspects of the project technically supporting the communities in the implementation of adaptation activities. They also benefit from capacity building in this project.
National organizations	National Programme for Local Development (PNDL), Department of National Parks (DPN), Directorate of Environment and Classified Establishments (DEEC), L'Office National de l'Assainissement du Sénégal (ONAS), Direction des eaux et forêts, chasse et de la conservation des sols (DEFCCS), National Climate changes Committee (COMNACC)	They will be involved various aspects of the project technically supporting the communities in the implementation of adaptation activities. They also benefit from capacity building in this project
Regional and local administrations	La Direction Régionale des Eaux et Forêts (DREF), La Direction Régionale de l'Hydraulique (DRH), La Direction Régionale des Eaux et Forêts (DREF), La Station d'Epuration (STEP), La direction de l'urbanisme, Les services d'hygiène de la ville de Thiès, Le conseil régional de Thiès, La Direction Régionale du Développement Rural (DRDR), Les centres de santé de Médina Fall (circonscription I et II) ainsi que celui de Nguinth, La commune d'arrondissement Nord, Regional Climate Change Committee (COMRECC)	Municipalities' staff, local authorities (e.g. village leaders) & community organisation (including women & young groups, farmers& pastoralist associations, etc.) will be project target groups contributing to the identification of key project activities, institutional arrangements, and stakeholders' involvement.
Community-level stakeholders	National Council for Dialogue and Cooperation for Rural (CNCR), Association for the Development Projects Base (ASPRODEB)	They will be the direct beneficiaries and the project will strengthen their capacity and support to reduce their vulnerability to CC. In addition, they will be involved in the management of field activities
NGOs/CSOs	Enda Energie, *Environnement, Communautés, Santé et Sécurité* (ECOSS), Dynamique Femme Association	Part of stakeholder consultation, provides opportunities for lesson learned from ongoing projects and linkages to EbA mainstreaming opportunities
Research institutions	ANACIM, Institute of Agronomic research -ISRA. Research and technical services (ISRA-CRODT, ANAMS, regional water an	Involved in the identification and dissemination of climate resilient agricult

titutions	d technical services (ISRA-CRODT, ANAMS, regional water an d forestry Division, Agriculture, LPA, ANCAR. The National Ins titute of Soils (INP), Centre for Ecological Monitoring (CSE), I nstitute of Environmental Sciences (ISE)	emination of climate-resilient agricult ural practices, and recipients of traini ng. Support the development of the clima te information systems that contribut e to research development and assist ance to target communities on unders tanding climate impacts and adopting climate resilient activities.
Private secto r	COSEER, SONATEL, Danone, Laterie du Berger, SUNEFOR, SO DEFITEX	Investors in value chain infrastructure, buyers of nature-based products, co-fi nancers
International organization s	WB, AfDB, EU	Engaged in consultations and opportu nities to build capacity on EbA in ong oing projects explored

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

In Senegal, women represent 52% of the total population and 48% of the active population. In the NAPA and other national strategy documents, women are recognized as "the actors most vulnerable to both climate change and the impacts of poverty" (NAPA). Approximately 28% of female-headed households are extremely poor, compared to 25% of male-headed households (ANSD, 2014). In the project areas, women usually stay in the villages while men migrate to find employment, so their engagement in the project is essential for the sustainability.

Although national policies on women's empowerment – as well as sectoral policies related to forestry, agriculture and livestock – promote women's equal participation in decision-making and the formal economy, in practice, traditional systems of local governance remain largely patriarchal and do not significantly include women in decision-making, including the FBR and the Plateau of Thies governing bodies (i.e. Silvipastoral Reserves and Pastoral Units (UPs), forests, Wildlife Reserves and Community Natural Reserves (RNCs)). In the project, this will be improved by the strengthening or establishment of representational local women's committees in each village involved, thus ensuring the participation and ownership of the female beneficiaries throughout the project implementation.

In the project areas, women usually stay in the villages while men migrate to find employment, so their engagement in the project is essential for the sustainability. The business incubation schemes will seek to support natural resource-based enterprises that are likely to generate direct benefits for women, or that are traditionally consistent with recognized cultural norms of women's role in the community. In the rural productive areas of Senegal, women are mainly involved activities for consumption and low profitability: in the cultivation and marketing of market garden produce, milk, rain-fed rice, the processing of agricultural products and the rearing of small ruminants. Men tend to be active in more profitable commercial activities such irrigated rice and cash crops, large and small ruminant livestock.[1] Gender literature indicates that women can more easily be persuaded to learn and start innovative approaches that build on traditional knowledge, and they are therefore more willing participants in ecosystem-based approaches to climate adaption.

In line with national policies aimed at increasing women's economic empowerment and participation in decision-making, at least 50% of the direct and indirect beneficiaries of the project will be women. A gender analysis and action plan will be developed during the project formulation, and a gender specialist will be recruited and consult with women during field visits to ensure their engagement and that proposed activities directly respond to their most immediate needs. The analysis and plan will be regularly updated by gender experts during the project implementation, with the engagement of women beneficiaries.

[1] AFD 2016. PROFIL GENRE DU SENEGAL. https://plateforme-elsa.org/wp-content/uploads/2014/02/Profil-Genre-Senegal.pdf

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project’s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

A private sector platform will be established as part of Component 3, with the objective of identifying existing and new business opportunities and facilitating market linkages for climate-resilient nature-based products. Regional, national, and international private sector players will be engaged, and a strategy will be developed to catalyze private sector investment in natural resource SMEs.

Potential private sector investors identified to date include **Danone** and **La Laiterie du Berger** for milk products sourced from the FBR, as well as The **COSEER** Company, which has committed to replacing diesel engines in boreholes with solar generators and biogas-powered engines in the project areas to reduce water access costs and GHG emissions. Locally produced Arabic gum is used by multinationals such as **Nestlé**, **Starbucks** and pharmaceutical companies, and mining (of phosphate by **BMCC/Avenira**) as well as agribusiness (**SUNEOR**: peanuts, **SODEFITEX**: cotton) also hold potential market opportunities.

SMEs and local entrepreneurs will also be supported to identify potential national, international and multilateral financing mechanisms to support additional investments in the promotion of EbA.

Some private sector companies have already committed to contribute to co-financing this project. These include:

· The COSEER Company, through provision of solar generator infrastructure.

· The Orange Foundation, owned by Senegal's leading telecommunications operator SONATEL, also intends to contribute to the financing the project for an amount to be defined during the project preparation phase (PPG).

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Table 3 Risks and mitigation

Risk	Level	Mitigation strategy
Limited sharing of information or collaboration between relevant national agencies and directorates, research institutes and the private sector reduces the speed and efficiency of the project	Moderate	ASRGM, DPN, DEFCCS, the city of Thies, research institutes and the private sector will be encouraged to share information through a number of technologies and systems that will be strengthened or introduced by the project. The most appropriate technologies and systems will be selected according to the most suitable approaches for information sharing in the local context. For example: - technical working groups for the development of EbA protocols, comprised of scientists, extension agents, engineers, planners, local elected officials and villagers; - protocols to ensure effective communication between national directorate staff and grassroots community organizations; - Forums that will connect the private sector with other stakeholders (e.g., community-based organizations) involved in natural resource-based activities; - strengthening synergies between relevant sectoral priorities and ongoing public investments; - an information platform through which stakeholders involved in natural resource-based enterprises can communicate, enabling the sharing of EbA knowledge;
Climate variability and extreme weather events undermine the implementation of interventions and lead to economic losses and/or material damage.	Moderate	The project's EbA interventions will target areas identified as vulnerable to the impacts of climate change. For example, EbA will be implemented in sites subject to the effects of climate change to reduce risks or physical impacts. In addition, the project will integrate information on local vulnerabilities to climate change by developing a close collaborative relationship with the project (platform) and ANACIM - in order to integrate up-to-date weather forecasts into the EbA protocols and the processes for updating these protocols. In addition, the partnership with ANACIM will also be established to prepare livelihoods in c

		ase of extreme climate event.
Frequent turnover in government agencies lead to limited institutional memory and disruptions and/or delays in program implementation, which could jeopardize the sustainability of the program.	High	Decisions, best practices and lessons learned will be documented throughout the project in order to consolidate the institutional memory that will support project activities. This memory will also be strengthened through the online platform that will be developed. The EbA protocols will be developed in French and in the main local languages to guide new staffs involved in the implementation of EbA during and after the project. In addition, technical working groups will be set up to update these protocols using an adaptive management approach. These technical working groups will include non-governmental stakeholders - scientists, engineers, planners and village leaders - thus strengthening the institutional capacity to plan and implement EbA within and outside the implementing institutions and government agencies (ASRGM, DPN, DEFCCS.)
Equal opportunities to develop natural resource-based enterprises may be disrupted by social tensions and power relations within resident communities.	Low	Project activities will be designed to be transparent and will maintain a broadly collaborative approach throughout the implementation period, to ensure that women will have access to support. The proposed approach to identifying communities that will participate in project activities will include provisions such as minimum standards for the establishment of dispute settlement mechanisms, a dispute and complaint register and other measures to ensure transparency of project activities and comply with the principles of free, prior and voluntary consent.
Limited technical capacity of government authorities and local communities to implement EbA interventions	Moderate	Training will be provided to the relevant administrations and local communities involved in the project activities. Topics to be covered will include (i) the implementation of EbA protocols in a scientifically rigorous manner, with particular emphasis on continuous monitoring and evaluation; and (ii) the implementation of communication protocols. The technical capacity of these stakeholders to implement, monitor and sustain interventions will also be strengthened through the development of participatory methods for local communities to assess the effectiveness of EbA interventions in collaboration with national management staff.
The infrastructure and equipment acquired under the project is not maintained and operated efficiently or optimally	Moderate	Long-term monitoring and maintenance plans for the equipment purchased will be established to support businesses in the natural resources sector (e.g. generators, value-added processing equipment for forest products and agriculture). A portion of the project resources will be used: (i) to train the extension staff of national directorates (ASRGM, DPN and DEFCCS) in the use and maintenance of the equipment purchased; and (ii) to maintain the machinery and equipment (including replacement of parts as necessary).

Unsustainability of business models and management capacities in rural areas.	Moderate	The project will address the identification, establishment and operation of community-managed enterprises using a phased approach that will identify successful practices, provide training to fill capacity gaps and apply strict selection criteria to minimize exposure to unsustainable business models and negative socio-economic behavior and unintended economic impacts. Continuous training and access to extension services for entrepreneurs through national directorates (ASRGM, DPN, DEFCCS) will focus on strengthening the capacity of beneficiaries to manage investments beyond the project period.
Failure to change behavior leads to the exacerbation of existing threats and the persistence of unsustainable practices - for example, practices such as overexploitation of pastoral resources, excessive logging of trees, etc.	Moderate	The project's interventions under the EbA will not be sustained in the long term without the support and commitment of agro-pastoral communities. Therefore, the project will ensure that participants fully understand and approve the proposed land use plans. through community engagement in the design of EbA activities. In the medium and long term, the project's approach to combating the continued degradation of natural ecosystems will be to generate clear and measurable economic benefits from the sustainable management and marketing of natural resources, thereby providing incentives for rural households to protect and restore their ecosystems.
Fiduciary risk: funds are not used for the intended purposes; do not achieve value for money; and/or are not properly accounted for.	Moderate	The project will apply UNDP's well-tested fiduciary risk management strategy, which is a written standard based on widely recognized processes and an internal control framework to protect against fraudulent and corrupt practices and waste. The project will develop detailed operational and monitoring plans, deliver financial monitoring reports and financial statements that will provide for any warning flags that may indicate possible misuse or losses and require an urgent response. Further, the GEF Minimum Fiduciary Standards require that the implementation and executive functions are clearly separated, which, in the case of this project, are divided between UNDP and IUCN as executive agencies and ASRGM as implementation agency.
Global and regional health emergencies prevent implementation of project activities	Low	Global and regional health emergencies, such as the current SARS Cov-2 (COVID-19) pandemic, regional viral outbreaks and other widespread contagious events are likely to occur in future however are typically limited in time. This may delay and disrupt project activities but will not prevent their implementation. Maintaining flexibility, proactive program management and adapting technologies to new crisis situations will help ensure implementation. Understanding how the disease spreads will help the project implement necessary health and sanitary precautions, as well as leveraging novel ways of communicatin

		n and sanitary precautions, as well as leveraging novel ways of communicatin g (radio, TV, mobile phone) will help mitigate against delays.
Lack of coherence con sidering the disparate geographic reality of T hies and the FBR, in pa rticular in case travel re striction are reenforced	Low	The KM component (component 4) will put an emphasis on the coordination between the activities conducted in both project regions. The project coordin ation unit (PCU), in particular the M&E specialist and the coordinator, will ens ure that the lessons learned are capitalized and shared across the project are as. In addition, stakeholders at the local level (either local project staff or loca l government staff supporting the project) will support the day-to-day activitie s and report to the PCU (based in Dakar) to identify barriers to be considered, lessons learned and best practices to replicate in other areas.

COVID-19 impacts, risks and action framework

COVID-19 Impacts

Brief situation analysis: According to WHO, the first case in Senegal was recorded in January 2020[1], though other reports suggest that it was early March, carried by travelers from France and Italy. This was followed by community transmission in clusters, with most cases occurring in the bigger urban centers. The latest available figures are reporting a total number of confirmed cases of 15,213 (WHO, 20 October 2020)[2] - with 313 reported deaths (out of a total population of 15.4 million people). Based on data from June 2020, In Senegal, the 20-39 age group is the most vulnerable and the males are more affected with a ratio of 1.25[3]. Regional data shows that the urban centres of Dakar and Touba are the most affected, with Thies and parts of the Ferlo showing moderate infection rates.

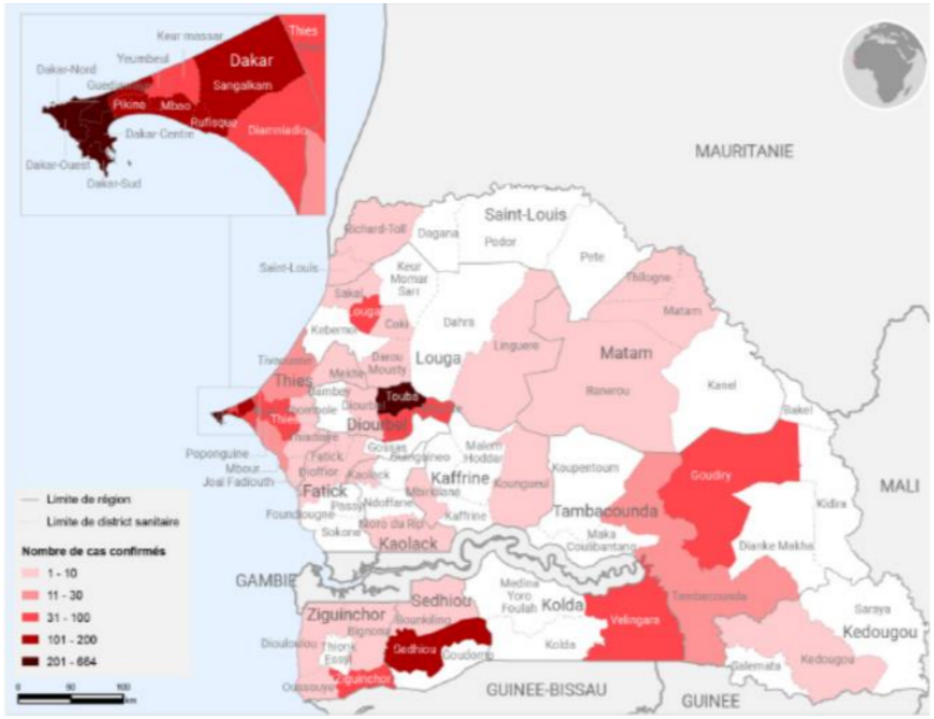


Figure 1 COVID-19 infections by region, Ministère de la Santé et de l'Action sociale, Sénégal (June 2020)

Government response: Senegal has been praised for its response and at one point was ranked second out of 36 countries on Foreign Policy's COVID-19 Global Response Index, which looks at how national leaders are responding to the pandemic[4]. Operationally the response is being coordinated by Health Emergency Operations Center, which was set up after the 2014 Ebola outbreak. Within a month of the first case, the government declared a state of emergency, imposed a curfew and restricted travel between Senegal's 14 regions including cancellation of public events, lockdown of ports, closure of schools, universities, nurseries, churches and mosques, and suspension of all international flights to and from Senegal airports. The government also committed that every person testing positive would have a treatment bed, whether they had symptoms or not, keeping infected citizens away from home, where they might transmit the virus to family members. Churches and mosques were re-opened in mid-May and the state of emergency and the related curfew was lifted on 30 June 2020 in Senegal. Air borders have been open again since 15 July, and international flights have resumed following a defined health protocol. Land and sea borders remain closed and the wearing of masks remains compulsory in all public spaces, workplaces, public and private, transport and shops[5].

Socio-economic impacts: According to data compiled by Devex[6], Senegal has received around $880 million to date in direct support on the COVID-19 response and recovery from donors, with large contributions coming from the International Development Association[7], the International Monetary Fund, and the Islamic Development Bank. Funds are earmarked for activities such as the construction and management of Epidemic Treatment Centres, improving the capacities of the intensive care units, support the distribution of food kits and the payment of the electricity and water bills for vulnerable households, cash transfers to the poorest and support for the adoption of measures to shield workers from dismissal and technical unemployment during the pandemic, ensuring that workers are paid a guaranteed minimum wage.

The most heavily-impacted economic sectors have been finance, tourism, manufacturing and agriculture, largely due to travel restrictions, a decline in international trade, waning demand for exports, and supply-chain disruptions. In 2019, Senegal received an estimated US$2.52 billion in remittances, representing 10% of the country's GDP[8]. These are likely to shrink dramatically in the short term and highlights the vulnerability of the country to future global emergencies.

The impact of COVID-19 is also expected to have an impact on food security in the region. The FAO Index of food prices declined significantly between January and May, falling to their lowest level in seventeen months but have subsequently followed an upward trend in September, with the highest value since February 2020.[9]

Specific risks caused by COVID-19

Risk	Risk Rating	Mitigation measures
Prolonged economic slowdown and supply chain disruptions may lead to increased costs and availability of outsourced services and equipment	Low to Moderate	During the PPG phase, adequate budgetary provision will be made to accommodate and price increases and achieve maximum efficiency in sourcing of materials and services, drawing on local and regional options where possible, to avoid delays in supply. Since the country's borders and international air traffic routes are already open, it is envisaged that the impact of supply chain disruptions during project implementation will be minimized.
The viability of revenue-generating EbA activities is compromised by protracted economic slowdown as a result of indirect impacts of COVID-19 (e.g. slowdown in tourism).	Moderate	Under Outcome 3, the project will develop Basic Investment Plans and, short-term action plans to test income-generating activities in NFRs (based on a funding gap-analysis).
Re-introduction of local travel restrictions in the event of a new COVID-19 outbreak may lead to disruptions in project implementation and lack of availability of technical expertise	Low	Local travel restrictions represent a low risk to implementation. Should there be future outbreaks, the project will need to ensure that safe transportation systems are in place and institute appropriate measures such as social distancing, use of PPE and hand hygiene to limit risks of transmission. The project activities will primarily be implemented by site-based staff, in cooperation with neighbouring local communities and landowners, thus limiting the need for travel, and the impacts local restrictions of movement may present to project implementation.

		Wherever possible, external expert inputs should be locally-or regionally-sourced to limit the disruptions that travel restrictions may present. However, where the services of off-continent experts cannot be substituted for with national or regional capacity, adequate budgetary provision must be made to enable effective virtual engagement, and adequate time must be built into contracts to accommodate the greater time margins required to offset the inefficiencies associated with remote working conditions.
Limited data on the incidence of COVID 19 makes it difficult to assess the level of risk and anticipate potential outbreaks, and the impacts these may have on project implementation	Moderate	In the absence of new data on the incidence of COVID-19 in targeted communities, a precautionary approach should be adopted in which maximum-avoidance is practiced - this will be particularly important during PPG which should start in 2021. At the start of the PPG, a re-assessment of the COVID-19 situation should be made (as part of the social and environmental safeguard risk screening process) and, based on the best-available data, a simple COVID-19 risk dashboard should be developed to monitor COVID-19-related risks, set risk thresholds, and specify mitigation/avoidance measures to be followed. The dashboard should be used to track: incidence of COVID19 in the project domain (with gender-disaggregation of data), and among project partners and staff involved in implementation (based on best available information and use of simple questionnaires to screen for possible symptoms); partner capacity (human resources, capacity to meet cofinance commitments); evidence of direct, indirect and induced impacts (that may influence implementation). The risk dashboard should be updated monthly and used to inform adaptive management. Adequate budget will be built into the PPG IP, and the project budget, to ensure community health and safety and safe working conditions for those involved in project development and implementation.

Contribution to the green recovery

This project presents several opportunities for contributing to the green recovery from the more immediate impacts of COVID-19 and building longer-term resilience in the face of future outbreaks, or other diseases and pandemics. More specifically, opportunities to contribute to the green recovery and Senegal's strategy for building forward better are as follow:

- Protection and restoration of forest ecosystems, including through promoting sustainable use of forest resources and limiting forest fragmentation and degradation through inappropriate land uses. This will reduce the risks of encroachment on natural and wild ecosystems, recognized to be responsible for the development of the COVID-19. In particular, activities under component 2, for the regeneration of rangelands (output 2.1.1) and restauration of agropastoral ecosystems (output 2.1.2) will reduce the incentives to initiate agricultural practices on preserved ecosystems. In addition, the restoration of the climate resilient green belt in the commune of Thies (output 2.1.5) will participate to limit forest fragmentation.

- Promoting NRM practices that generate Global Envionmental Benefits and resilience to climate change, with economic benefits for forest adjacent communities. The increased resilience of communities, including of livelihoods (outcomes 3.1 and 3.2), will provide an opportunity for targeted beneficiaries to have access to a safer source of revenues and accumulate savings or invest in insurance (output 3.2.3). This will in turn ensure increased financial security in case of another pandemic, leading to travel restrictions and lockdowns.

A more comprehensive analysis of risks and opportunities related to the Covid-19 pandemic will be undertaken during the project preparation phase as the situation is still changing and it will be important to have an up-to-date assessment to inform project design. An updated COVID-19 Action Framework will be incorporated in the project's Environmental and Social Management Framework to be developed during PPG.

[1] https://www.who.int/countries/sen/

[2] https://www.who.int/countries/sen/

[3] IMPACT SOCIO-ÉCONOMIQUE DE LA PANDÉMIE DE LA COVID-19 AU SÉNÉGAL JUIN 2020

[4] https://globalresponseindex.foreignpolicy.com/

[5] https://sn.ambafrance.org/Coronavirus-2019-nCoV-3295

[6] https://airtable.com/shrIm0peNMV9V5ly1/tblPLFiRLN9zlSDIf?backgroundColor=yellow&viewControls=on

[7] https://www.worldbank.org/en/news/press-release/2020/06/19/senegal-covid-19-response-gets-additional-financial-boost-from-world-bank

World Bank, Annual Remittances Data (updated as of April 2020)a

[9] http://www.fao.org/worldfoodsituation/foodpricesindex/en/#:~:text=The%20FAO%20Food%20Price%20Index,the%20groups%20over%202014%2D2016.

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

The project will be executed through two accredited **Implementing Agencies**:

· **UNDP**, as GEF implementing agency and lead agency for this project, has been present in Senegal since 1975 and has extensive and wide-ranging experience throughout the world and in Senegal. UNDP has achieved significant results and experience towards good governance, and a strong track record in Senegal. GEF financed several projects through UNDP in Senegal, in particular : (i) the Project for the Promotion of Innovative Financing and Community Adaptation in Communal Areas around Community Nature Reserves (PFNAC); (ii) the Project to Strengthen Land and Ecosystem Management in the Niayes and Casamance in a Context of Climate Change (PRGTE); (iii) Senegal National Adaptation Plan (NAP) of which the achievements have been leveraged to develop this project, (iv) the Project for the Management of Degraded Land in the Peanut Basin (PROGERT) and (v) the Project for the Integrated Management of Senegal's Ecosystems (PGIES);

· **IUCN** has been present in Senegal for about thirty years and supports the Senegalese State, its branches and local authorities in the development and implementation of biodiversity conservation programs and sustainable development policies. IUCN has an international network of experts in EbA, particularly in arid and semi-arid lands, with valuable scientific and technical capacities to support the project implementation. It has extensive experience in Senegal through the following projects: (i) The Project for the Valorization of Species for the Sustainable Use of Wild Resources in Senegal (VALEURS); (ii) the Local Environmental Front for a Green Union (FLEUVE) Project; (iii) the project for the Protection of Infrastructures and Ecosystems (EPIC); and (iv) the Project for Strengthening the Resilience of Populations Vulnerable to Food Insecurity (PREVIAS). At the international level, IUCN developed the Drylands Initiative which aims to restore, sustainably manage and protect ecosystems in arid and semi-arid zones to generate multiple environmental, economic and social benefits.

Given the strength of each Agency's existing relationships in the project areas, UNDP will take the lead on activities in Thies, and IUCN will take the lead on activities in the FBR. Along with UNDP, IUCN were instrumental in setting up the biosphere reserve and are recognized experts in conservation and protected areas, which is expected to prevent safeguards issues in the Reserve. Most recently their work in the FBR has included integrating the sustainable management of natural resources, land and ecosystem risks into local development plans and their implementation through the setting up of innovative and multi-stakeholder partnerships including the public and private sectors, as a contribution to the implementation of the Great Green Wall Initiative in the Sahara and Sahel.

Each of the four project components will be implemented in the two project areas with almost all activities replicated in both. Cross-cutting activities which IUCN will lead include EbA stakeholder training, and assessment and strengthening of governing bodies in the FBR and Thies. Activities specific to Thies which UNDP will lead include EbA measures to combat flooding, and establishment of a green-belt in the city. The finalisation of allocation of activities will be made during the PPG.

The **Lead Executing Agency** will be the Senegalese Agency for the Reforestation of the Great Green Wall (ASRGM), and the City of Thies will be a responsible partner for the execution of the activities in Thies.

An **M&E strategy** will be developed under Component 4 and its implementation will be supported with the recruitment of an M&E expert. The M&E will be carried out in accordance with the UNDP Program and Operations Policies and Procedures (POPPs), the UNDP Evaluation Policy, and the IUCN Monitoring and Evaluation Policy. Other M&E activities necessary to support adaptive management at the project level will be finalized in the PPG phase.

Overall, the Ministry of Environment & Sustainable development (MEDD) established the National Climate change Committee (COMNACC) as an exchange platform for stakeholders engaged in climate change interventions. During the PPG phase, in-depth consultations will be undertaken in this framework to establish partnerships and practical modalities for linking and collaborating with the listed on-going initiatives so that duplication is avoided and LDCF resources build on the progresses and achievements made to date through these initiatives. Key potential initiatives and partners are laid out in the section on additionality and baseline. During the preparatory phase a strategy and plan for collaboration with relevant on-going initiatives will be prepared, including defining the roles and responsibilities of critical stakeholders. As the three agencies involved in delivering this LDCF funded project are UNDP, IUCN and ASRGM (GGWI) there is significant opportunity for internal coordination with projects identified below.

The following GEF- and non GEF-funded projects have been identified as the primary focus for coordination of activities and stakeholders, due to their geographic, scope and agency overlap:

Senegal National Adaptation Plan (NAP) (GEF – 6) UNDP is strengthening the capacity of sectoral Ministries and local governments to better assess the implications of climate change and to adjust existing policies and budgets for the integration of medium and long-term climate change risks and adaptation measures. The NAP project will create an enabling environment for adaptation planned in this EbA project. This LDCF funded project will in turn provide specific data and lessons learned to the NAP process on EbA practices leading to increased resilience in the agriculture sector, without threatening the key ecosystems that protect against increasing disaster risks. As UNDP is the GEF agency for both this project and the NAP project, this will facilitate information flow, in addition to the pro-active sharing of information in project workshops and consultations.

Large-scale Assessment of Land Degradation to guide future investment in SLM in the Great Green Wall countries (GEF-6): A multi-country project (including Senegal), which is assessing Sustainable Land Management (SLM) Interventions made to date. These lessons learned / results are directly relevant to the project activities, as the ASRGM leads the work on the GGWI in Senegal and the Ferlo is located in the GGWI zone.

Promoting innovative finance and community-based adaptation in communes surrounding community natural reserves (PFNAC) (GEF-6). UNDP is working with the MEDD in 203 villages to review local development plans to integrate climate adaptation priorities and resilience and setting up innovative & sustainable financial mechanisms and improve the capacity of local credit & saving mutuals to finance adaptation projects. As there is an overlap in geography (the project covers Ferlo, as well as other areas Niokolo Koba, Senegal river Bas Delta & Saloum Delta) and in scope (local governance, financing), UNDP will take a pro-active role in coordinating stakeholder engagement, as well the lessons learned.

Strengthening Land & Ecosystem Management Under Conditions of Climate Change in the Niayes and Casamance regions- Republic of Senegal (PRGTE) (GEF-5). UNDP is working with MEDD on creating an enabling environment for adaptation including weather forecasting, mangrove and forest restoration, vegetable gardens and agroforestry, and strengthening capacity of technical officials. While there is no geographic overlap with this project, the approaches and lessons, especially from the restoration and livelihood activities will be important to consider.

Project for the management of the ecosystems of the Plateau of Thies, implemented by the NGO ADT-GERT with funding from the Belgian NGO Droederglene, and with the support of Belgian cooperation. This project aims to fight against wind and water erosion and gullying of the plateau, to allow better infiltration of run-off water and restoration of the biodiversity of the plateau. The natural infrastructure technologies used in this project will be replicated and scaled-up in this LDCF project.

Local Governance Project for Adaptation and Resilience to Climate Change, implemented by the NGO GRAIM (working with 6 municipalities of the Plateau of Thies on adaptation and resilience), scheduled to end in 2020, which is before the activities of this project will start – therefore the results and lessons learned will be important input.

In addition, there will be pro-active engagement aiming to incorporate the successful approaches and lessons learned from the following GEF and non-GEF funded projects in Senegal, especially in terms of ecosystem restoration, alternative livelihoods and SME financing:

Fostering Sustainability and Resilience for Food Security in Sub-Saharan Africa - An Integrated Approach (IAP-PROGRAM) (GEF-6): A multi-agency integrated programme that promotes sustainability and resilience through management of the natural resources—land, water, soils, trees and genetic resources across 12 African countries including Senegal.

Agro-ecology, Ensuring Food Security and Sustainable Livelihoods while Mitigating Climate Change and Restoring Land in Dryland Regions (AVACLIM) (GEF-6): FAO, through a multi-country project (including Senegal) is collecting and disseminating best practice for agroecology, ensuring food security and sustainable livelihoods while mitigating climate change and restoring land in dryland regions.

Promoting SLM practices to restore and enhance carbon stocks through adoption of Green Rural Habitat initiatives (GEF-5): UNEP, with MEDD and the Department of Environment and Gazzeted Areas (DEEC) are supporting scaling up of sustainable land management (SLM) practices of agroforestry, water harvesting techniques, and controlled grazing to improve productivity, reduced erosion and enhanced carbon stock in regions of Thies, Saint Louis, Fatick, Matam, Tambacounda, Diourbel, and Luga, in Senegal.

Mainstreaming Ecosystem-based Approaches to Climate-resilient Rural Livelihoods in Vulnerable Rural Areas through the Farmer Field School Methodology (GEF – 5) FAO is working with MEDD, the Ministère Agriculture et Equipement Rural (MAER); ANACIM, and the Centre de Suivi Ecologique (CSE) to enhance the capacity of Senegal's agropastoral sector to develop more climate-resilient production systems, through Farmer Field Schools, building institutional capacity on climate change strategies and improved information management.

Scaling-Up Resilience in Africa's Great Green Wall (SURAGGWA)(GCF) FAO has submitted a concept note to the GCF to work in six African countries, including Senegal, to scale-up successful restoration practices with native species, support the development of climate- resilient, low emission value chains of non-timber forest products in support of vulnerable communities' livelihoods, and strengthening the Great Green Wall's regional and national institutions. If the concept note is approved, then it will be an important project to coordinate with.

Building the climate resilience of food insecure smallholder farmers through integrated management of climate risks the *R4 Rural Resilience Initiative* (GCF): The World Food Programme and Ministry of the Environment of Senegal are working in Kaffrine, Kolda, Tambacounda, Fatick, and Kaolack, introducing community-based water and soil conservation measures, weather index insurance, farmer risk reserves and innovative collateral.

Senegal Integrated Urban Flood Management Project (GCF): The Agence Française de Developpement (AFD) is supporting investment in the drainage infrastructure investment for an area the City of Dakar vulnerable and contributes to establishing a national-scale integrated policy for disaster risk management.

Increasing resilience of ecosystems and communities through restoration of the productive bases of salinised lands (GCF): International Union for Conservation of Nature (IUCN), Institut National de Pédologie (National Soil Science Institute (INP), Réseau Africain pour le Développpement Integré (RADI) and the Centre de Suivi Ecologique (CSE) in the Sine Saloum Region.

Transforming financial systems for climate (GCF) AFD is working in 17 African countries with local financial partners to scale up private sector climate finance and facilitate project funding (through credit lines) in the target countries.

ASER Solar Rural Electrification Project (GCF) The West African Development Bank is faclitating the cofinancing solar PV mini-grids, as part of Senegal's rural electrification strategy.

Regional Project to Support Pastoralism in the Sahel (PRAPS) (IDA) PRAPS will improve access to markets and essential productive assets and services for pastoralists and agropastoralists in the Ferlo basin, through the establishment of infrastructure and equipment, strengthening of local capacities and national administrations and the implementation of land development initiatives in pastoral units and community reserves. It is also building the national capacity to respond in a timely and effective manner to pastoral crises or emergencies. This project is scheduled to end in 2021, therefore it wil be important to engage during the PPG phase.

West Africa Coastal Areas Management Program (WACA) (NDF, World Bank) The WACA Program was created in response to countries' request for solutions and finance to help protect the social and economic assets of coastal areas against coastal erosion and flooding. In Senegal, it focuses on operationalization of a National Coastal Observatory, operationalizing and strengthening the geographical information system and upgrading and strengthening the early warning system. This project seeks to ensure cooperation in the context of support for strengthening the ANACIM early warning system (output 1.1.5).

The Small Grants Programme (GEF) A number of small soil and slope restoration projects have been undertaken in and around Thies, for example as implemented by L'Association pour le Développement des Technologies, la Gestion de l'Espace et des Ressources des Terroirs (ADT GERT), Regroupement pour la Protection de la Nature/GREEN Sénégal. Drawing on this practical experience of reducing degradation and restoration activities will be valuable for Component 2 of this LDCF funded project.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assesments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

This LDCF project complies with Senegal's *National Adaptation Programme of Action* (2006), which identified four priority components: (i) reforestation including restoration of vegetation and recovery of cultivation areas; (ii) rational use and recycling of water to allow intensification and diversification of crops, (iv) prevention of loss of soil fertility, and (iv) awareness raising in order to strengthen the capacity and ownership of sustainability activities. Urgent activities identified for the groundnut basin, including Thies, are reforestation and development of agriculture (e.g. small plots and market gardens (covered in this project's Component 2 and 3 respectively). Priority activities for the North zone (including Ferlo) are reforestation with adapted species, micro irrigation and recovery of runoff (covered in Component 2 of this project).

The *National Adaptation Plan* (NAP) was validated in 2017, and identified eight priority sectors, of which five are directly related to this project: agriculture, water resources, biodiversity, livestock and management of risks and catastrophes related to floods (health, coastal zones, and fisheries are outside the scope). Drawing on the NAP, Senegal's report on its *Nationally Defined Contribution* (NDC) [1] sets out activities to reduce emissions, including reforestation, restoration and management of soils, reducing the degradation of forestry resources and modernization of the livestock sector *inter alia*. The specific objectives for adaptation outlined in the NDC report include (i) reinforcing the observation networks and collection of climate data (covered in Component 1), (ii) reinforcement of the resilience of ecosystems and the activities of production (aligned with overall objectives), and (iii) assuring the health, well-being and the protection of populations against the risks and catastrophes linked to extreme events and climate change (addressed by the flooding prevention activities in Component 3). *Senegal's Third National Communication on Climate Change to UNFFFC*[2] provides updates on the eight priority areas identified in the NAP, and identifies three adaptation objectives: strengthening the resilience of ecosystems and production activities (the primary focus of this LDCF EbA project), the strengthening of observation networks and the collection of climate, ocean and coastal data (included in Component 1 of this project) and ensuring the health, well-being and protection of populations against risks and disasters related to extreme events and climate change (explicitly addressed through the flood protection measures to be implemented in Component 2). In addition, the current LDCF-funded NAP project, focuses on two priority sectors: agriculture and management of risks and disasters, which were considered as a baseline for the development of this project.

This project is also in line with the policy orientations of *National Sustainable Development Policy (PNDD)* in terms of climate change, specifically: (i) prevention and management of risks related to climate change and natural disasters; (ii) mitigation of the effects of climate change on ecosystems; (iii) promotion of the integration of climate change risks into sectoral policies and national planning; (iv) transfer of clean technologies through existing mechanisms; (v) promotion of sustainable production and consumption patterns; and (vi) capacity-building on climate change at the institutional and civil society levels; and the vision of *Senegal's National Climate Change Policy (PNCCS)*, which focused on: (i) strengthening the capacities of populations and ecosystems to adapt to and mitigate the effects of climate change and (ii) strengthening the sustainable management of the environmental and natural resources (particulary the aspects on restoration of degraded land habitats through the co-management of protected areas and the conservation of biodiversity; reversing the deforestation trend and improving sustainable land management; and development of adapted and/or emerging environmental management approaches and technologies).

Specifically in terms of land, the Government of Senegal adopted in 2014 the *National Strategic Investment Framework for Sustainable Land Management* (CNIS/GDT), which emphasizes intersectoral synergies, and engages various actors and methods of land development.

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[1] Ministere de l'Environment et du Developpment Durable, November 2019. Rapport de la contribution determine au niveau national du Senegal

[2] Third National Communication on Climate Change to UNFFFC

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

Component 4 is dedicated to knowledge management and M&E, and the detailed activities are outlined in Section 1.a.3. The results of the project will have significant demonstrative value with potential for replication and scale-up at local, national and sub-regional levels. A monitoring and evaluation mechanism, putting communities at the heart of participatory research processes, is planned to produce, disseminate and transfer knowledge and learning. In order to ensure a wide popularization and dissemination of the outcomes in the long term at local, sub-regional and international level, an online platform will be developed as a repository of all project results, training, tools and initiatives for experimentation and demonstration of EbA actions. Opportunities for South-South exchange and triangular co-operation will be further developed in the PPG stage.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Kindly refer to the project's Social and Environmental Screening Procedure (SESP) template.

Supporting Documents

Upload available ESS supporting documents.

Title	Submitted
6603 pre-SESP GEF 7 Senegal Ferlo Biosphere Reserve and Thies Clean	

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

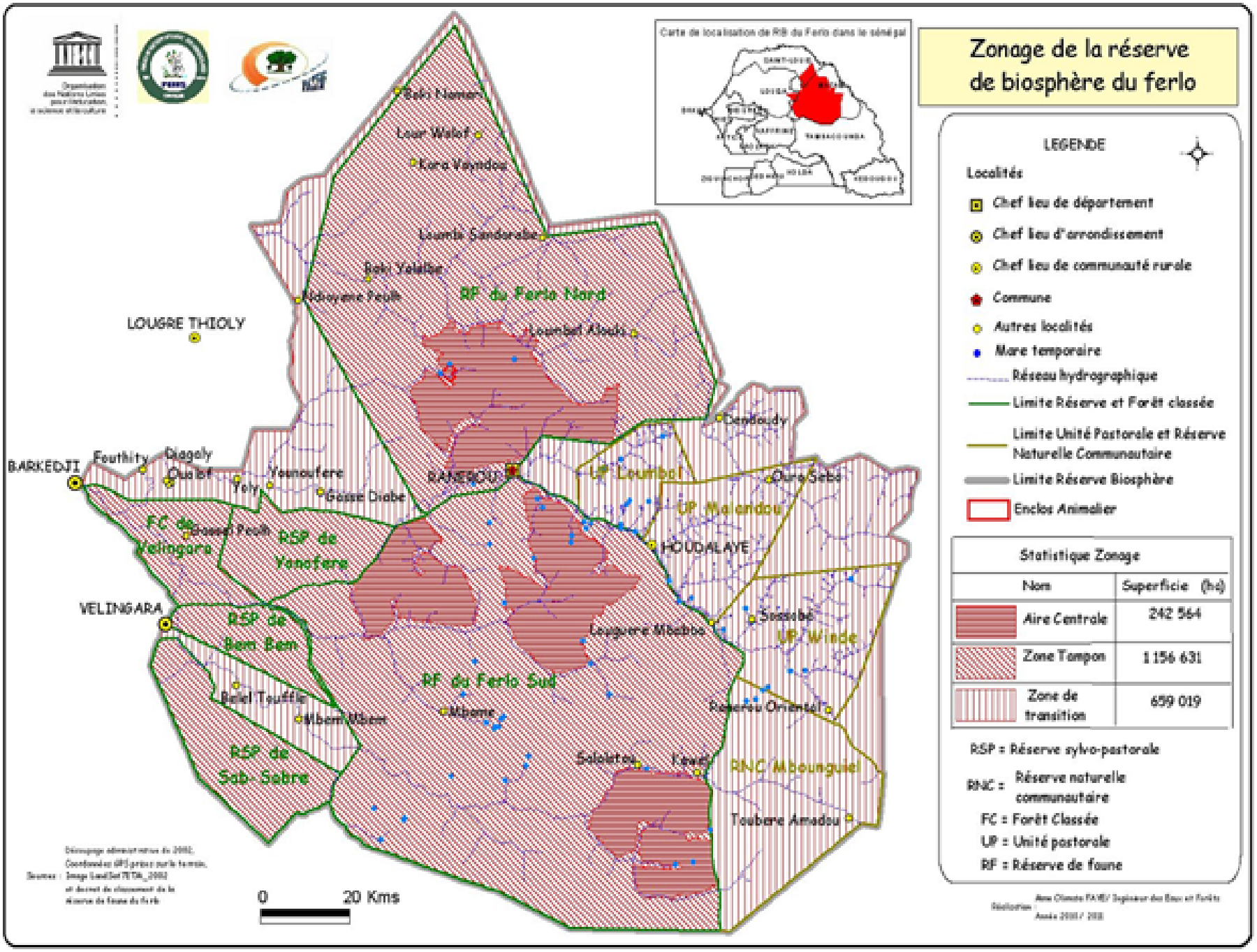
A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Mr. Baba DRAME	Director of Environment and Classified Establishments (DEEC)	MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT (MEDD)	7/27/2020

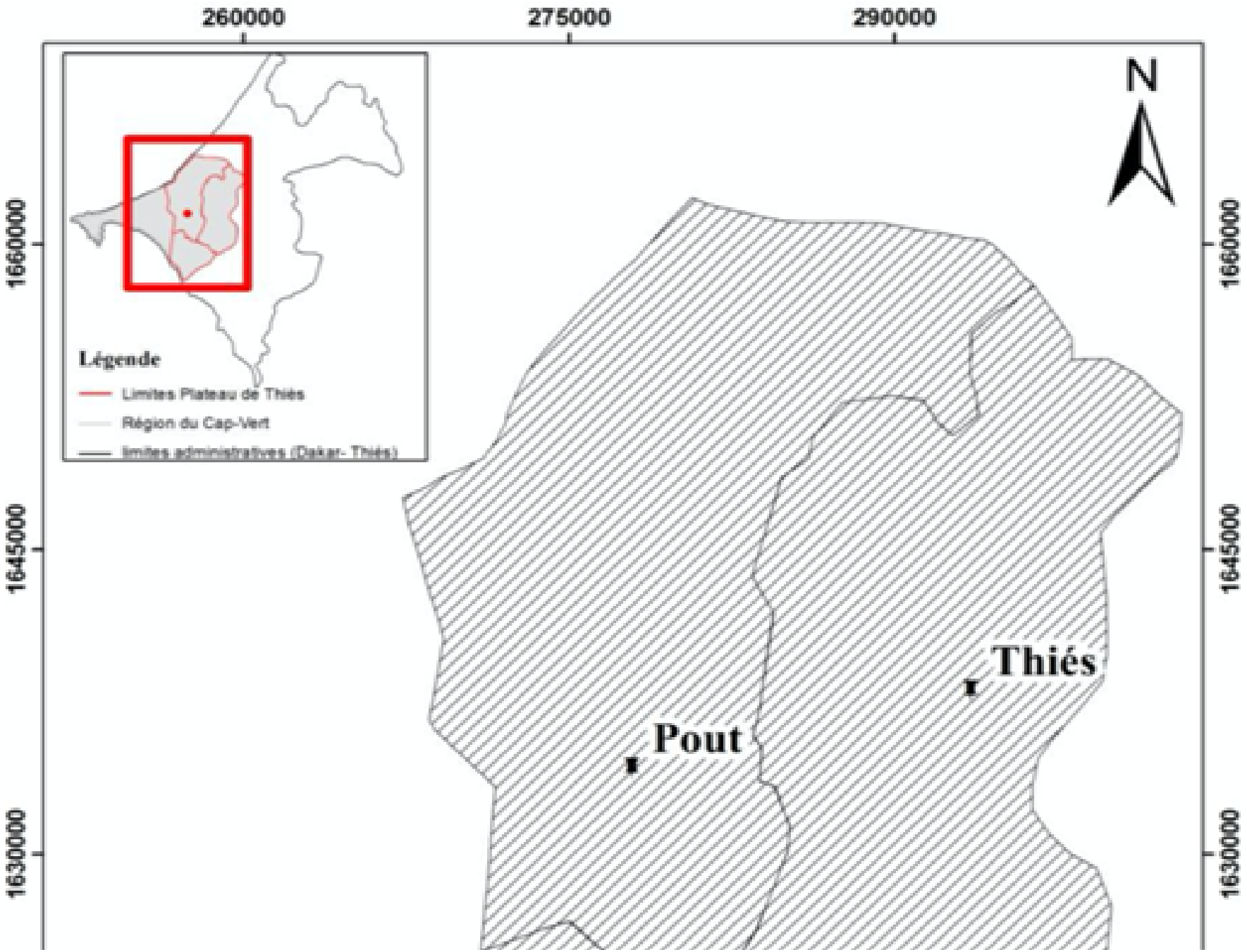
ANNEX A: Project Map and Geographic Coordinates

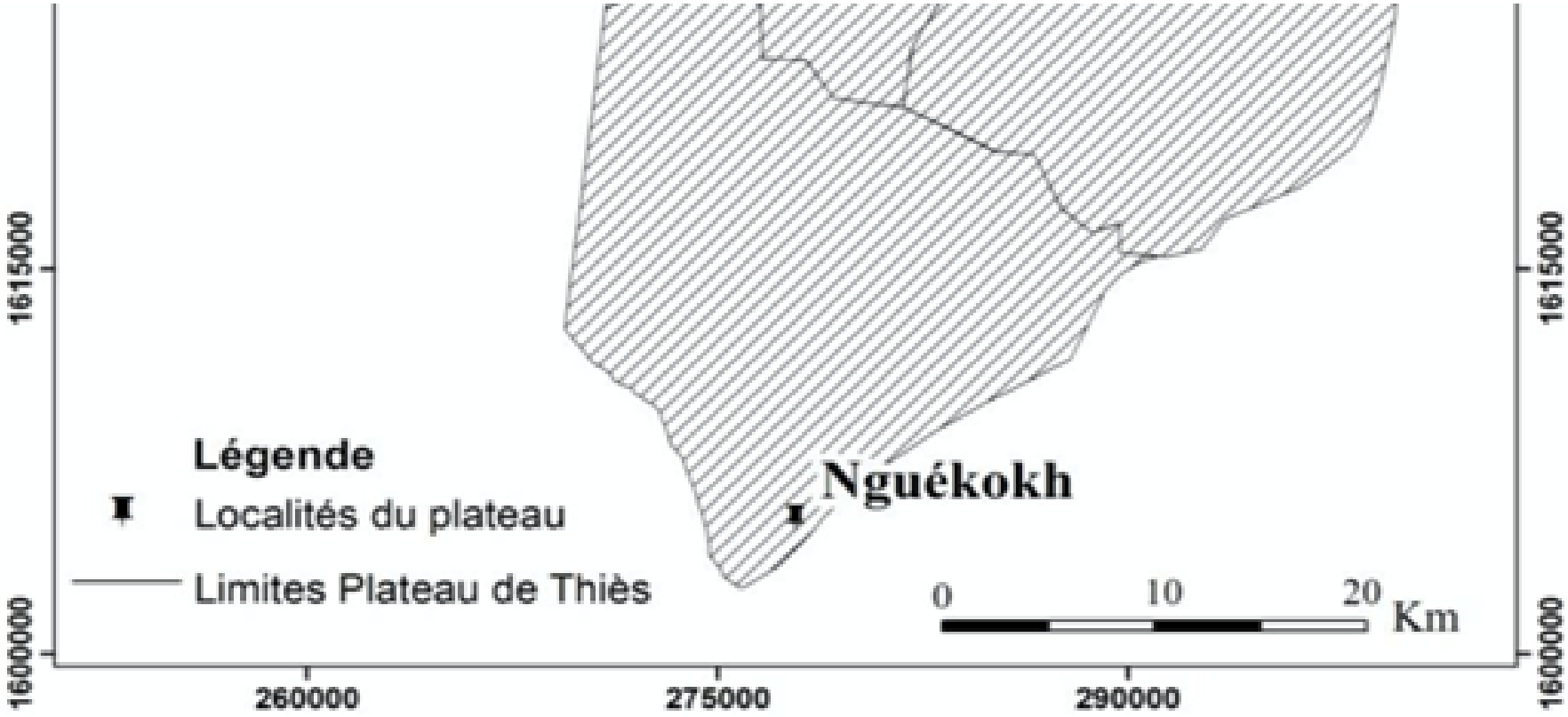
Please provide geo-referenced information and map where the project intervention takes place

The FBR is located in the Ferlo, commonly known as the agro-sylvo-pastoral zone, in northern Senegal between latitudes 14°24' and 16°11'N and longitudes 13°07' and 14°51'W.


Zonage de la réserve de biosphère du ferlo
Carte de localisation de RB du Ferlo dans le sénégal
LEGENDE
Localités
Chef lieu de département
Chef lieu d'arrondissement
Chef lieu de communauté rurale
Commune
Autres localités
Mare temporaire
Réseau hydrographique
Limite Réserve et Forêt classée
Limite Unité Pastorale et Réserve Naturelle Communautaire
Limite Réserve Biosphère
Enclos Animalier
Statistique Zonage
Nom
Superficie (ha)
Aire Centrale
242 564
Zone Tampon
1 156 631
Zone de transition
659 019
RSP = Réserve sylvo-pastorale
RNC = Réserve naturelle communautaire
FC = Forêt Classée
UP = Unité pastorale
RF = Réserve de faune
Réalisation :
Année 2007 / 2008
Découpage administratif de 2002;
Coordonnées GPS prises sur le terrain;
Image LandSat TETA_2002
et decret de classement de la réserve de faune du Ferlo
Sources :
0
20 Kms
LOUGRE THIOLY
BARKEDJI
Feuthity
Diagaly
Oualof
Youcoufere
Yoly
Gassa Diabe
RANEROU
Loumbel Aboubo
Bobi Namer
Lour Walof
Kara Veyndou
Loumbi Sandaraba
Bobi Yalalbe
Mbeuyene Peulh
Centoudy
UP Loumbol
Oure Sebe
UP Malendou
HOUDALAYE
Gassel Peulh
FC de Velingara
RSP de Yanafere
VELINGARA
RSP de Bem Bem
Beiel Touffle
Mbem Mbem
RSP de Sab-Sabre
RF du Ferlo Sud
Mbeme
Louguere Mbabbo
Soussibé
UP Winde
Pasteau Oriental
Salalatou
Kawel
RNC Mbounguel
Toubare Amadou

The Plateau of Thies is located in western Senegal, in the Senegalese-Mauritanian sedimentary basin on a substratum made up of Cretaceous and Tertiary deposits. It straddles the administrative regions of Thies and Dakar, covering an area of more than 4,000 km². It is home to twenty-four (24) local assemblies, including the city of Thies.





The City of Thies, located between latitude 14° 47' 27.618" N and longitude 16° 56' 9.096" W, covers an area of 68.82 km2. It is surrounded to the south by the municipality of Notto-Diobass, to the north and south-east by the municipality of Mont Rolland and the municipality of Fandene with a small opening to the north-west to the municipality of Keur Moussa.