



GLOBAL ENVIRONMENT FACILITY  
INVESTING IN OUR PLANET

Naoko Ishii  
CEO and Chairperson

June 17, 2015

Dear LDCF/SCCF Council Member:

UNDP as the Implementing Agency for the project entitled: ***Senegal: Strengthening Land & Ecosystem Management Under Conditions of Climate Change in the Niayes and Casamance Regions- Republic of Senegal***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by LDCF/SCCF Council in January 2014 and the proposed project remains consistent with the Instrument and LDCF/SCCF policies and procedures. The attached explanation prepared by UNDP satisfactorily details how Council's comments have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at [www.TheGEF.org](http://www.TheGEF.org). If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,



Naoko Ishii  
Chief Executive Officer and Chairperson

Attachment: GEFSEC Project Review Document  
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



# REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: FULL SIZED PROJECT

TYPE OF TRUST FUND: LDCF

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## PART I: PROJECT INFORMATION

Project Title: Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance ecoregions- Republic of Senegal (PRGTE)			
Country(ies):	Senegal	GEF Project ID: <sup>1</sup>	5566
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4964
Other Executing Partner(s):	Directorate of Water, Forests, Hunting and Soil Conservation	Submission Date:	16 April 2015
		Resubmission Date:	4 June 2015
GEF Focal Area (s):	Climate Change	Project Duration(Months)	60
Name of Parent Program (if applicable):		Project Agency Fee (\$):	389,500
<ul style="list-style-type: none"> <li>➤ For SFM/REDD+ <input type="checkbox"/></li> <li>➤ For SGP <input type="checkbox"/></li> <li>➤ For PPP <input type="checkbox"/></li> </ul>			

### A. FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>

Focal Area Objectives	Expected FA Outcomes	Trust Fund	Grant Amount (\$)	Cofinancing (\$)
CCA-1	<b>Outcome 1.1:</b> Vulnerability of physical assets and natural systems reduced	LDCF	300,000	1,000,000
	<b>Outcome 1.2:</b> Livelihoods and sources of income of vulnerable populations diversified	LDCF	1,000,000	2,000,000
	<b>Outcome 1.3:</b> Climate-resilient technologies and practices adopted and scaled up	LDCF	565,000	1,000,000
CCA-2	<b>Outcome 2.1:</b> Increased awareness of climate change impacts, vulnerability and adaptation	LDCF	163,000	1,000,000
	<b>Outcome 2.2:</b> Access to improved climate information and early-warning systems enhanced at regional, national, sub-national and local levels	LDCF	1,400,000	5,000,000
	<b>Outcome 2.3:</b> Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures	LDCF	475,000	2,500,000
	Project management	LDCF	197,000	700,000
	<b>Total project costs</b>		4,100,000	13,200,000

### B. PROJECT FRAMEWORK

**Project Objective:** To strengthen the enabling environment for the implementation of appropriate adaptation measures based on ecosystem management in Niayes and Casamance Regions.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
Component 1: Climate and socio-environmental information platform	TA	Effective forecasting, preparedness and decision making information	Output 1.1: The climate, meteorological and hydrological network for the target areas and the	LDCF	1,400,000	5,000,000

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

<sup>2</sup> Refer to the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

for determining climate-driven vulnerabilities and cost effective adaptation options in Niayes and Casamance		management systems for determining and tracking climate impacts on ecosystem systems established	capacities strengthened in order to produce reliable data needed to monitor and analyze hydro-climatic phenomena  <u>Output 1.2:</u> Develop an integrated information system producing climate information and generating the products needed to identify risks related to climate change (e.g., maps for risk, vulnerability, etc.)  <u>Output 1.3:</u> A platform for sharing information established to support the management of climate risks and long-term planning for adaptation.			
<u>Component 2.</u> Reducing climate driven risks in target ecosystem and land through adaptive restoration measures	INV	Ecosystem based adaptation options including the adoption of climate resilient land and ecosystem management practices in two target area (Niayes and Casamance) reduce exposure to climate induced risks	<u>Output 2.1:</u> At least 100 hectares of mangrove plantations restored to reduce the impact of swell and coastal erosion;  <u>Output 2.2:</u> Multi-purpose community forests resilient to climate change tested in the vegetable gardens of Niayes to protect crops from wind erosion and prevent encroachment by sand dunes.  <u>Output 2.3:</u> At least 10 community groups, particularly women's groups, supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies.	LDCF	1,828,000	4,000,000
<u>Component 3.</u> Knowledge and information support mechanisms	TA	Individual, household and community capacities will be strengthened in order to increase awareness about responses to climate change and effective support for	<u>Output 3.1:</u> Local governments and decentralized technical services have the necessary capacities to support communities in implementing adaptation activities;	LDCF	675,000	3,500,000

		adaptation efforts.	<u>Output 3.2:</u> The benefits from implemented adaptation solutions are monitored and shared with government officials, target communities and partners to inform them about project results replication opportunities.			
			Subtotal		3,903,000	12,500,000
			Project management Cost (PMC) <sup>3</sup>	LDCF	197,000	700,000
			<b>Total project costs</b>		<b>4,100,000</b>	<b>13,200,000</b>

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

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Cofinancing Amount (\$)
Recipient Government	Ministere de l'Environnement et du Developpement Durable	Grant	3,000,000
Recipient Government	Ministere de l'Environnement et du Developpement Durable	In-kind	200,000
Recipient Government	ANACIM	Grant	3,500,000
Bilateral aid agency (MAECD)	Ministere de l'Environnement et du Developpement Durable	Grant	4,000,000
GEF Agency	UNDP	Grant	2,500,000
<b>Total Co-financing</b>			<b>13,200,000</b>

### D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in \$)		
				Grant Amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
UNDP	GEFLDCF	CCA	Senegal	4,100,000	389,500	4,489,500
<b>Total Grant Resources</b>				<b>4,100,000</b>	<b>389,500</b>	<b>4,489,500</b>

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

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

### F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount (\$)	Cofinancing (\$)	Project Total (\$)
International Consultants	15,000	45,000	60,000
National/Local Consultants	103,500	3,500,000	3,603,500

### G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? NO

<sup>3</sup> PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

**PART II: PROJECT JUSTIFICATION**

**A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF<sup>4</sup>**

A summary of what changed since the PIF is provided below

Original project design in PIF		Adjustment/improvement made at CEO Endorsement
<u>Allocation of LDCF resources per component</u>		
Comp. 1) \$2,000k Comp. 2) \$1,100k Comp. 3) \$804k Project Management: \$195k	Component 1: 1.400 million  Component 2: 1.828 million  Component 3: 0.675 million  Project Management: 0.197 million	The analyze of the baseline situation during the preparatory phase and detailed budgeting carried out in connection with the PRODOC development resulted in adjustments in the allocation of LDCF resources per component, but total LDCF request is unchanged. <ul style="list-style-type: none"> <li>- <u>Component 1</u>: the LDCF allocation decreased of 0.6 million after the inventory of existing climate information by ANACIM.</li> <li>- <u>Component 2</u>: an increased of 0.728 million based on demand from stakeholders to allocate more resources on communities activities</li> <li>- <u>Component 3</u>: decreased of 0.129 million after the evaluation of capacity needs</li> </ul>
<u>Co-financing resources and source</u>		
Indicative total: \$43.7 million  Comp. 1) \$4 million (from ANACIM and MEDD )  Comp. 2) \$38 million (from bilateral aid agency and UNDP)  Comp. 3) \$1 million (from bilateral aid agency and MEDD)  Project Management: \$0.7	Total co-financing: \$13,2 millions  Component 1: \$5 million (from ANACIM and MEDD technical department)  Component 2: 4 million (from bilateral aid agency)  Component 3: 3.5 million (from bilateral agency, UNDP and MEDD)  Project Management: \$0.7 million	The total leveraged co-financing has decreased by approx. 70% from what had been foreseen at PIF stage, totaling of \$13.2 million in mobilized co-financing at CEO Endorsement stage.  During the Project development phase a screening of ongoing initiatives was realized to determine the more suitable baseline in target areas. This led to several changes in the co-financing figures presented in the PIF.  <u>Component 1</u> : increase of 1 million due to more engagement of ANACIM

<sup>4</sup> For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter “NA” after the respective question.

Original project design in PIF	Adjustment/improvement made at CEO Endorsement	
million (from UNDP and MEDD)	(from UNDP and MEDD)	<p><u>Component 2</u>: decrease of 34 millions. Changes on co-financing amount from the “<b>Economic Development of Casamance Programme</b>” (PADEC) and the <b>Economic Development and Management Program of Niayes</b> (PADEN) are made due to the advanced stage in the implementation of the programs (about 4 years execution out of 8 years) and the level of interventions in the project target areas. By the way some co-financing figure from UNDP and PADEN are moved to component 3 (capacity development)</p> <p><u>Component 3</u>: increase of 3 millions due to the move of co-financing from UNDP (2 millions) and from PADEN (1 million).</p> <p>Finally, a change is made on the name of co-financing from bilateral agency (Programmes PADEN and PADEC) as the Ministry of Environment is executing the activities in the fields (see letter of co-financing).</p>

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, N NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

### 1.1 Intervention areas

The project “Strengthening land and ecosystem management under conditions of climate change” (PRGTE) will be implemented in two geographic areas: Niayes and Casamance.

The Niayes eco-geographic area is located along the northern coast from Dakar to Saint Louis. With a total area of 2754 km<sup>2</sup>, it covers the administrative regions of Dakar, Louga and Thiès. The project will be implemented in the rural councils of Léona and Kab Gaye (Louga), in the Mboro commune (Thiès) and, by extension, in its area of influence (Darou Khoudoss and Taïba Ndiaye). A short rainy season and an overall rainfall of 200 mm/year characterize Léona and Kab Gaye. By contrast, Mboro, located in the south, reports an overall rainfall of 300 mm/year.

- The rural council of Léona covers approximately 415 km<sup>2</sup> with 30,335 population and numbers 106 villages. The socio-economic activities are market gardening, agro-forestry, logging, livestock raising, fishing and trade. It is an outstanding onion production area but marked by lack of rain.
- The rural council of Kab Gaye covers 302.55 km<sup>2</sup> with 12,235 population and numbers 54 villages. The main activities are market gardening, rain-fed crops, livestock raising and small trade. The majority of the land (55.2%) is cultivated in rain-fed crops, market gardening in the basins (1.5%) and a minute portion occupied by residents (0.3%). The remaining land is divided between savannah shrub lands, forest plantations, grassy savanna and grassy steppe.

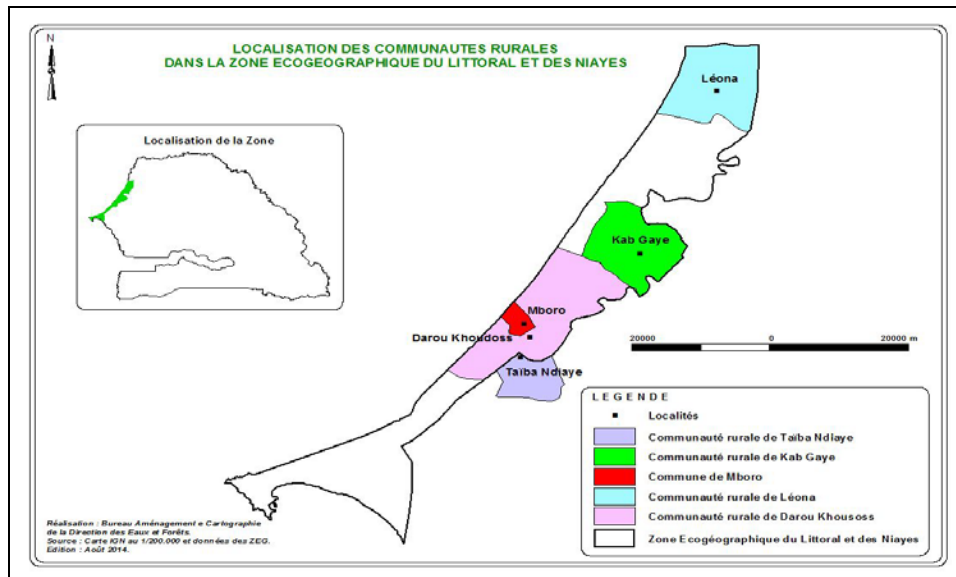


FIG 1: Target sites in Niayes ecoregion

- The Mboro commune covers 3.1 km<sup>2</sup> with 25,982 populations. It is an important industrial and commercial hub. Agricultural and fishery products play a key role for Mboro, which through its area of influence (Darou Khoudoss, Méouane and Taïba Ndiaye) is a large market gardening area. It provides 30% of the domestic production of potatoes and onions. Promoters come from Mauritania, The Gambia and Guinea Bissau for their supply. Women are the fastest growing marginalized group and are investing in all sectors of activities. The area of influence of Mboro encompasses the rural council of Darou Khoudoss (520 km<sup>2</sup>; 64,576 population), the rural council of Taïba Ndiaye (140 km<sup>2</sup>; 27,994) and the rural council of Méouane (334.3 km<sup>2</sup>; 38,170 population).

The eco-geographic area of Casamance corresponds to the natural region of the Casamance and combines the administrative regions of Ziguinchor, Sédhiou and Kolda, covering a total area of 28,350 km<sup>2</sup>.

- For the Ziguinchor region, activities will target the Tobor land (Niamone CR) and in the Kalounayes forest focusing on four rural councils (Niamone, Coubalan, Ouonck and Tenghory). In Kolda, the sites are the Soukou valley (Saré Bidji CR) and Saré Oumar (Dioulacolon CR).
- The Tobor land falls within the Niamone rural council, and the project will support the Tobor village development committee's activities to strengthen capacities to involve women in mangrove management (oyster farming and mangrove restoration through reforestation).
- The Kalounayes area lies in the Tenghory arrondissement, which covers 1073 km<sup>2</sup> and numbers 81 villages with a population of 48,235. The Tenghory arrondissement has four rural councils (Coubalan: 11,002 population; Niamone: 7,643 population; Ouonck: 10,385 population; and Tenghory: 19,205 population). The main socio-economic activities of Kalounayes interfering with forest resources management are agriculture, livestock raising, logging, fishing, trade, handicrafts, tourism and industries drawing their raw materials from the forest. The Kalounayes forest encompasses 33 villages.
- The Diendé rural council covers a total area of 164 km<sup>2</sup> with an estimated population of 20,655. The plateaus, made up of leached ferruginous and ferallitic tropical soils, are adapted to rain-fed crops (grains, groundnut and cotton). The hydromorphic soils suitable for rice production, arboriculture and market gardening are found in the basins and lowlands. The fairly good rainfall with peaks over 1300 mm is, however, quite irregular. Agriculture is the main source of income for over 80% of the workforce. Livestock raising, fishing, logging, trade, handicrafts and micro-industries are also conducted here.

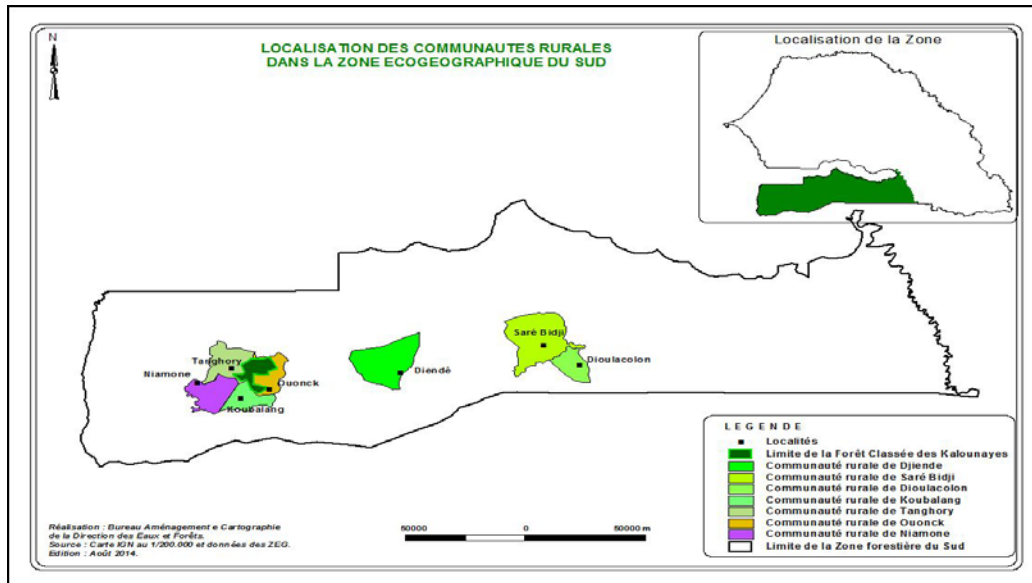


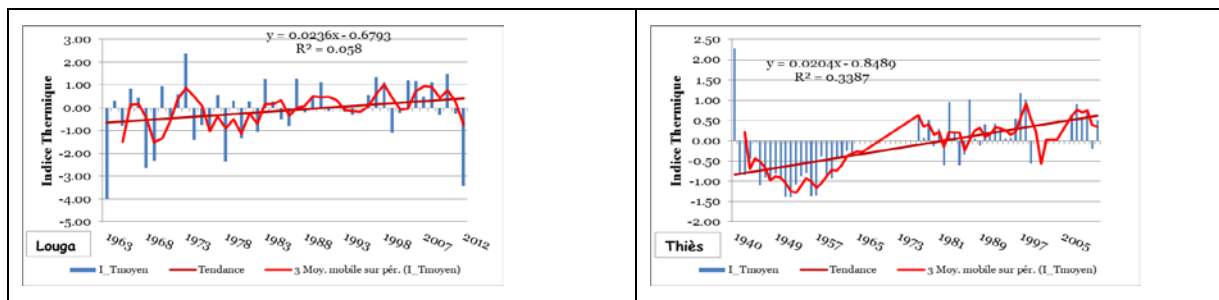
FIG 2: Target sites in Casamance ecoregion

- The rural council of Saré Bidji covers 375 km<sup>2</sup> with 16,982 population and numbers 93 villages. The main activities are agriculture, livestock raising, fishing, trade, handcrafts and logging. Recorded rainfall is approximately 1000 mm/year. The sandy-clay soil suitable for growing millet, sorghum, maize, rice and fonio covers over 90% of the land, followed by sandy soil (groundnut and millet) and then the pebbly soil of the plateaus. Excessive land use and the gradual abandonment of leaving plots to fallow are contributing factors to soil degradation. Added to these are bush fires and wind and water erosion.
- The rural council of Dioulacolou covers approximately 179.57 km<sup>2</sup> with 14,980 population and numbers 56 villages and borders the Saré Bidji CR to the north. Agriculture is the main activity, followed by livestock raising with real potential for poultry farming and fish farming. Logging, handcrafts and trade are also significant. The average annual rainfall ranges between 900 and 1200 mm. It borders the Saré Bidji CR, and the same types of soils can be found there.

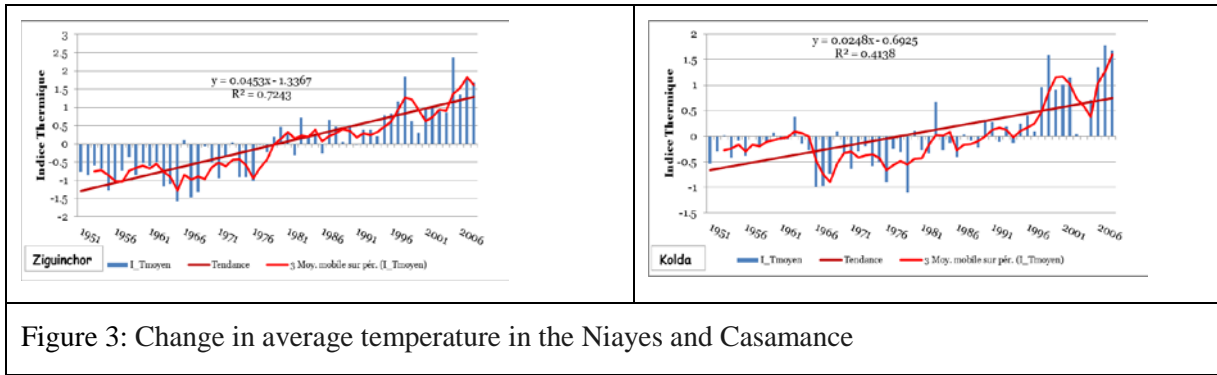
## 1.2. Climate change - induced problem

A detail report on Climate changes in project target sites is presented under the PPG Report 1.

In summary, temperature trends in the Niayes and Casamance, between 1940 and 2012, are rising (Fig 3). The upward trend is more pronounced in the Ziguinchor region with about 2.6 °C increase. The analysis also shows that the last decade was the warmest on record since 1950, especially in Casamance. These results were confirmed by several studies conducted in the Sahel (Ly, M., 2013)



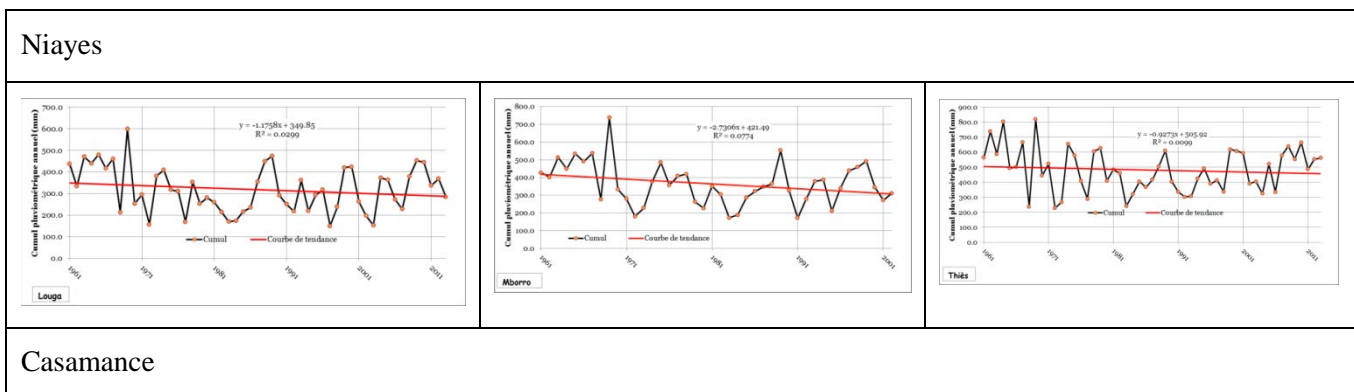




The comparison of average rainfall between the two periods of 1950-1970 and 1970-1990 shows a shift in isohyets throughout the country. Indeed, the 400 mm isohyet which was around 16 ° North during the 1950-1970 period moved south over 100 km at around 15 ° north for the period 1970-1990. A decrease in rainfall of about 200 mm was observed over most of the country with the exception of Casamance where it is more pronounced, with about 400 mm. As for the period 1990-2010, it is marked by a "recovery" of rainfall resulting in a slight move towards the North of isohyets compared with the period 1970-1990. This recovery is much more pronounced in the eastern half of the country compared to the coastal areas. An analysis of changes in rainfall between 1961 and 2013 in the Niayes and Casamance shows strong within-year variability of rainfall and declining trend of total rainfall (Figure 4).

This decrease in rainfall is much greater in the Mboro district of the Niayes and in Sédhiou for the Casamance. In these areas, the occurrences of pauses in rainfall are quite high and often compromise the chances of success of rain fed crops.

Scenarios of climate change in Senegal prepared under the second National Communication on Climate Change in Senegal shows temperature increases of about 3 ° C in the period 2031-2050, and of 8.5 °C for 2100. The rains are usually decreasing for all scenarios for the period 2006-2040.



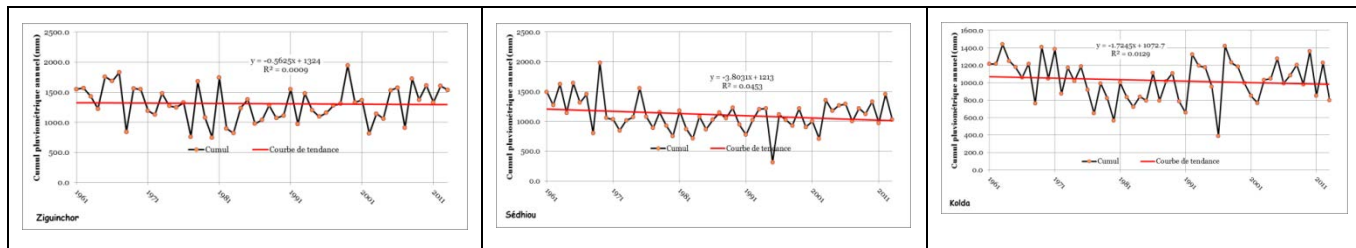


Figure 4: Changes in annual rainfall and trends in the Niayes and Casamance in 1961-2013

Rural communities depend heavily on ecosystems which products and services are often the only means for their livelihoods. The degradation of these ecosystems has increased dramatically as a result of human activities, but also due to climate change. The main potential and expected impacts of climate variability and change in the medium and long term are following:

In the eco-geographic area of the Niayes, climate change has caused the early depletion of water ponds and the deepening of the water table. This situation is also accompanied with salt water intrusion and thus the salinization of the water table, the main source of water for farms (vegetable, tree, forestry, poultry ...etc.). Key economic activities and ecosystems most affected are:

- **Horticulture:** The split of the seasons (dry, cold, rainy) is no longer neat and has resulted in the disruption of agricultural calendars. Therefore, farming techniques are no longer appropriate, and physical and chemical degradation of the soils led to reduce the effectiveness of agriculture inputs. The limited availability of agricultural inputs (seeds, fertilizer, water ...etc.), the resurgence of pest attacks, and limited agricultural technologies will continue to affect yields of horticultural enterprises, especially those undertaken by women who remain highly vulnerable, as long as effective adaptation measures are not implemented. In addition, sea spray conveyed by sea breezes that flow in the area during unexpected periods, and the harmattan winds cause significant damages to crops. Given the low level or absence of close protection (windbreak) the negative impacts on vegetable production, especially for onion, are alarming. The lack of effective adaptation strategies for the short, medium and long term results in the persistence of this situation that is a real threat to the horticultural industry in the Niayes and to food security for the entire country because this area accounts for 60% of the national production of vegetables.
- **Vegetation band:** The protection functions (fixation of sand dunes, protection of vegetable farms, house, etc.) and production (fuel wood, lumber, seeds...etc.) of the band of vegetation are well appreciated by local communities along the northern coastline of Senegal. The plantations of casuarinas were established between 1948 and 2004. The casuarinas specie is well adapted to high sunny conditions and is tolerant to salinity, but the increasing levels of temperatures and salinity are contributing to high mortality rates of the plantations.
- **The groundwater resources:** Declining rainfall and higher temperatures result, on one hand, in salinization and degradation of the groundwater, particularly in areas covered by sand dunes with the lowering of the water table, and on the other hand, in early depletion of surface waters due to high evaporation. Rising temperatures associated with the effect of the harmattan increases water requirements of plants because of high evapotranspiration. This trend combined with high demands for water and wasteful watering techniques does not favor the sustainability of water resources in the Niayes.
- **Impacts on health:** The Chemical Industries of Senegal (ICS) releases ammonia into the atmosphere. The pollutant gets blocked in lower layers by thermal inversion and is transported directly to homes and crop fields in the east or west directions. This toxic pollutant causes burning of the leaves of vegetable crops and fruit trees, diseases in humans and animals, pollution of the water table in some areas as evidenced by the case of abandonment of wells in some towns in the area etc. In this area, the risk of acid rain can be expected if the amount of ammonia reaches certain proportions during the rainy season. If the morning fog contains this pollutant has the same effects on crops and fruit trees in the area are observed.

In the eco-geographic area of Casamance, modifications induced by climatic change include salt-water intrusion in the continent, salinization of mangrove mudflats and rice fields, degradation of mangroves, loss soil fertility in the plateau areas due to erosions and related siltation of rice field, and forest degradation. This has led to changes in production systems practiced before. Between 1985 and 2006 changes are observed in the land cover. With respect to natural vegetation, there is a decrease in the area occupied by woodland and forest. This explains the increase in areas covered by savanna landscapes and tree species. The same downward trend is observed for the mangroves resulting in an increase in area of degraded mangroves. The mapping conducted by CSE shows a mangrove surface area coverage of 102,303 ha in 1985, 89,999 ha in 1993, and 90,381 ha in 2006. With regard to surface areas covered by crop fields, the mapping shows a total of 357,776 ha (73,655 ha of rain fed rice fields, and 28,4121 ha of rain fed crops) in 1985, and a slight decrease in 2006. Key sectors of economic activities most sensitive and most affected by climate change, and thus requiring adaptation measures, include, rice cultivation, mangrove forest, and highlands. The main sectors with current and expected impacts of climate change and variability in the medium and long term are:

- **Rice fields:** The increasing salinization of rice field has caused many women to abandon their rice fields. A main consequence of rice fields becoming unusable due to excessive salinity is the massive deforestation in the highlands for new farmland, and bushfires, combined with uncontrolled logging. This deforestation leads in turn to soil and water erosion that causes the progressive siltation of rice fields, provoking a further decline in rice fields. It is estimated that rice fields abandoned due to acidity and salinity totaled 130,000 ha between 1970 and 1986. In the early 1970s, the share of Casamance represented 70% of the national production of rice. Now it represents only about 32%, about half of what it was <sup>5</sup>Furthermore, the reduction in the duration of the rainy season and more frequent pockets of drought, and un-adapted rice varieties aggravate problems the rain fed rice cultivation is faced with. This situation exposes Casamance to more food insecurity because rice is the main food staple in rural and urban communities in Casamance. The regression of rice cultivation is partly offset by the development of new economic activities (cultivation of peanuts and millet, vegetable gardening, salt production, forest fruits harvesting...etc.). Efforts to rehabilitate the valleys by reducing the salinization and acidification have experienced very limited success due in part to increasing water deficits.
- **Mangroves:** The mangrove ecosystem of the Casamance estuary and lower river basin is remarkable because of its important biodiversity, and its ecological, economic and socio-cultural functions. It acts also as a buffer between the sea and the mainland, reduces coastal erosion, and protects against the effects of winds, and waves. Mangroves provide important forestry and fishery resources to communities. The economic products and services provided by mangroves include firewood, fishing, harvesting of oysters, medicinal plants, rice fields...etc. The mangrove areas play also very important cultural functions such being used as sacred forests for traditional customs and practices (totem, funerals, and various ceremonies). The mangrove ecosystem is also affected by the decrease in rainfall and continental runoff favoured the development of salt flats and the reduction of their extent and productions that are attached (ex. oysters, arches, shrimp). Climate change impacts include significant increases in salinity accelerating the degradation of mangrove ecosystems. Reforestation activities undertaken by NGOs and community based organizations show that it is possible to carry out successful activities of mangrove restoration with a focus on community participation, especially the involvement of women.
- **Forests:** In addition to the negative impacts of climate change on forests massive fraudulent exploitation of forests in Casamance causes serious threats to forests in this region. Areas classified as protected area suffer from various forms of degradation, as well, affecting diversity and plant density. It appears from the land mapping done by CSE in 2008 on a total area estimated at 1,468,506 ha of different forest formations, there are dramatic changes on forests and woodlands due to natural stress on about 13% for the area studied, and conversions due to encroachment on forest reserves estimated at 6% of the same area. These modifications and conversions are largely due to the impacts of climate change (reduced rainfall, higher temperatures) that led to the salinization of streams and wetlands, degradation of forests and farmland, and decline crop yields. This situation has resulted in lower incomes. To make up for these losses local populations rely more and more on forest resources leading to further forest degradation and being trapped in a vicious circle.

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<sup>5</sup> DAPS: WFP Study on Food Aid Impact and Role in Casamance, June 2007  
GEF5 CEO Endorsement Template-February 2013.doc

In conclusion, almost all social, economic, and environmental aspects in the two project areas are already seriously affected by the observed impacts of climate change. It is also certain that these impacts will be exacerbated in the short and most likely long term as well. The Intergovernmental Panel of Experts on Climate Change (IPCC) mentions in its 2007 report that LDCs, because of their low level of development will have technical and financial difficulties to deal with climatic changes and their impacts, and are considered among the most vulnerable countries to Climate Change. The report also indicates that for West Africa in particular impacts due to the increase in temperature and decrease in rainfall will cause significant levels of agricultural and GDP losses. Existing risks that could be exacerbated by climate change include greater erosion and low yields for rain fed agriculture, among others. Small farmers, who are the majority in rural areas, would be hardest hit with the decline in agricultural production, loss of income and population displacement, i.e. a deterioration of living conditions if appropriate measures are not taken.

The impact of climate change on populations' health is real. For example, in the two target areas, morbidity due to malaria is particularly high during the rainy season. In the same vein, rising temperatures are affecting the elderly and infants. Moreover, when soils in dry lands are loose, easterly trade winds cause an increase in dust that can provoke respiratory diseases. The wind regime acts as a transport agent of disease vectors and harmful pollutants.

### **1.3. Preferred Situation and Barriers to Overcome**

Despite various strategies, policies and measures that were undertaken, the current socio-economic situation in the Niayes and in Casamance is characterized by low resilience to climate change and variability. The weakness of the physical environment (low and erratic rainfall, low groundwater levels, salinization and soil degradation, loss of biodiversity, regression of mangrove and forest) under high human pressure and degradation of systems and production tools have led to falling incomes of local people. The sources of income for local communities mainly based on the services and products from these ecosystems will be increasingly affected by the impacts of climate change and variability. Unless appropriate solutions are implemented, these effects will have negative impacts on productivity in all sectors, resulting in difficult socio-economic conditions, including increased poverty and an impediment to national development efforts.

**The long term solution**, would be to promote the adoption of integrated agro-sylvo-pastoral systems and practices that are resilient to climate change and variability, that will improve horticulture and rice production, strengthen the protective and production function of the band of casuarinas and ensure sound management of water resources, forests and mangroves for the benefit of local communities in the project target areas of Niayes and Casamance.

The long-term solution for local communities' sustainable resilience to climate change will necessarily involve an understanding of climate information with the implementation of adequate financial, institutional and technical measures for a better adaptation of the socio-economic activities to climate change. Therefore, these challenges, sources of population vulnerability must be overcome by the producers to adapt to climate change in order to increase the resilience of the production systems in the intervention sites identified in the Niayes and Casamance. The stakeholders (institutions, producers, producer organizations, local governments, NGOs, etc.) in the project areas have identified the barriers presented below. Although these barriers are presented separately, they are linked.

#### **Barrier #1: Inadequate production systems challenged by climate change and variability:**

As stated previously, climate variability within seasons is a serious problem in the project target areas. This reality has a decisive impact on the agro-sylvo-pastoral production level in these areas. Climate change has resulted in the shortening of the rainy season, the disruption of the seasonal cycle (dry, cold and rainy) and the disruption of the cultivating and sowing calendar. All these disruptions are not without impact on the market garden cycle and rain-fed agriculture (rice production and food crop) and the low productivity of livestock and forestry systems. Agro-forestry and cattle ranching management systems are no longer adapted to climate variability. This affects farmers' yields, especially women who remain highly vulnerable as long as, effective and sustainable adaptation measures are not carried out.

The contribution from support and research institutions and decision-makers at all levels to help producers remove this barrier by developing appropriate production systems to climate change is low, including a very limited development of agro-forestry and livestock species adapted to climate change and variability. This situation is similar regarding the development of technical packages that take into account climate variability. In addition, there

is a lack of ecosystem approach such as the watershed approach in the management of agro-forestry and cattle ranching areas.

**Barrier #2:** Weak institutional capacity for climate information production and dissemination

The challenges due to climate change adaptation in the Niayes and Casamance, including those connected to barrier 1 above, require equipment and operating institutions capable of reducing the deficit on the production and access to climate information. In the project's two target areas, the meteorological and rainfall stations are far from meeting required standards. There are several shortcomings including the lack of well-functioning measurement instruments, human resources in needed quantity, logistics for data collection and adequate equipment for data processing (software, computers, etc.). In addition, there is a need for human and material resources for communicating climate information in a language that is accessible to different users (research and extension services, administration and decision makers at various levels and local people).

**Barrier#3:** Insufficient capacities of local communities, technical services and decentralized administrations to develop and implement adaptation practices to climate change.

Local communities and technical and administrative services at different levels (national, regional and local) are hampered by their legal, regulatory, financial and technical constraints. Here are some examples:

- The governance of natural resources, a critical aspect for adaptation based on land and ecosystem management, a major theme of this project, has serious flaws because of the coexistence of customary law with that of the national land management legal framework;
- Funding local activities is a major handicap because of low local government budgets (less than US\$ 20,000 per year on average) and non-decentralized trend to finance development;
- Illiteracy and lack of training of most local officials are an exacerbating factor;
- Availability of managerial services in quality and quantity is a serious handicap;
- Finally, the lack of coordination between government and non-government stakeholders is a problem at different levels.

These various weaknesses and challenges lead to the following problems.

- Limited experiences in the consideration of scientific information including climate: To cope with climate change and variability including the lifting of barrier 1, producers and institutions (research & development) initiated adaptation strategies that are still inadequate. Indeed, these strategies are applied at very small scales and developed without the benefit of appropriate scientific knowledge. These strategies are mainly based on traditional knowledge that is far from being adequate due mainly to the rapid changes. For example, for the livestock sector, the measures consist of reducing herd size and migration to richer pasture. In agriculture, for instance, the emergence of agricultural areas around boreholes for market gardening is noticeable; initiatives towards the use of early maturation seed varieties developed by research institutions (sorghum, millet, peanuts, rice, etc.); crop monitoring and advice to producers on critical planting dates and useful rain required for sowing, etc. This support by the research and extension services to producers is well intentioned but produces very limited effects because of a lack of relevant climate information.
- Local Governments limited ability and insufficient awareness: Regional and local political and administrative authorities lack the capacity and a sufficient awareness to manage the effects of climate change and variability. Local development plans level of implementation is low and it is necessary to channel available resources towards activities and resilient investments by incorporating climate risk in municipal budgets. In this regard, the general knowledge on climate change and its consideration in the strategies and development programs are generally low at all levels (national, regional, county and municipal).
- Government technical services with limited capacity: National technical services at different administrative levels are responsible for the technical support to local communities for the implementation of various activities of economic and social nature and the protection of the environment upon which most of these activities depend on. However, the technical staff has very limited resources to fulfill these responsibilities. In general, public services at national and local level suffer from inadequate physical presence both in

quality and quantity. Decentralized departments of agriculture on which the majority of rural people rely, as well as the weather forecasting support system, whose role for increased resilience is critical, are no exception. This situation leads to low institutional capacity of decentralized government and the support provided by the decentralized technical services at the local level is far from covering the needs. Therefore, decentralized technical services should be strengthened and farmers need more information and demonstrations of options for adaptation.

- Weaknesses linked to social rules and policies including gender and birthright: Gender issues and birthright constitute major constraints that can be summarized as follows. Women in the project target areas and the rest of Senegal are seldom sufficiently involved in identifying problems and solutions and in the decision making process. In addition, women are faced with problems that are unique to them: (i) unfair access to production resources including land, training, funding, etc.; and (ii) an unfavorable distribution of roles and responsibilities between men and women in the production and social life. Considering the percentage of the population they represent, the important role they play in all fields and their remarkable capacity of mobilization, women's involvement is essential to improve the resilience of local communities. Moreover, concrete examples demonstrate the importance of specific adaptation strategies implemented by women's organizations that can be powerful agents of change.

The Senegalese youth, including those in the project target areas, present the following important characteristics: (i) this most educated group has become increasingly the largest section of the population; (ii) young people are more open to new ideas and technologies, which are essential to adapt to climate change and variability, which present new challenges that require new knowledge and attitudes. These essential assets for resilient living conditions are often seriously impaired by some traditional customs, including the birthright, which means that the oldest always lead. Young people are also restricted on many issues related to land and ecosystems management.

**Barrier #4:** Producers and households with low technical and financial capacities: The vast majority of people in the project target areas are victims of extreme poverty causing extreme limited technical and financial capacity to adapt to climate change.

The project areas are characterized by low productivity of agro-sylvo-pastoral activities linked to underuse of agricultural inputs and appropriate equipment, in addition to a strong dependence on rainfall and fragile ecosystems. Producers (growers, ranchers, loggers, oyster harvesters, rice farmers, farmers, etc.) have very limited financial resources. This results in limited equipment and access to inputs and technical guidance needed to overcome the precarious living conditions.

Due to the population's low income levels and limited access to credit, farmers and households do not have the financial resources to make required investments to adapt to climate change: such resources include new technologies to make agro-sylvo-pastoral activities more resilient; and diversification of activities for better risk management.

Combined with high population growth, this situation causes an increase in areas used for agro-sylvo-pastoral activities and its corollary alarming degradation of ecosystems that in turn exacerbate the impacts of climate change.

#### **1.4. National and local benefits**

This project supports national development goals and plans to achieve Millennium Development Goals (MDGs) 1, 3 and 7.

- *MDG 1: Eradicate extreme poverty and hunger* – at least 5000 direct and 30,000 indirects beneficiaries will be supported to use climate information, understand climate risks and develop climate resilient livelihoods activities to improve household's livelihood. Key adaptation measures will be promoted in order to enhance agricultural and generate income for vulnerable households, specifically women. Means and skills will be to help them to be prepared and act appropriately and effectively in a timely manner, in case of climate shocks. Seasonal forecasts can enable the rural population to take adaptive farming measures to protect productivity;
- *MDG 3: Promote gender equality and empower women* – Adaptation measures and relevant associated training will be tailored to end-user needs, in particular the needs of women who have little access to

climate information.

- *MDG 7: Ensure environmental sustainability* – The foundation of this project is to ensure environmental sustainability by promoting mangrove restoration, water management and soil Protection and Restoration / Soil and Water Conservation measures. This approach can assist in the sustainable use of natural resources through good land- and watershed-management practices.

In term of socio-economic and environmental benefits, the project will help to decrease the exodus of rural population to urban centers and migration with the restoration of land and ecosystem (youth and women can now develop economic activities related to the wise use of mangroves resources and exploitation of Niayes). This will improve income-generating opportunities and therefore limit the migration process toward big cities. Furthermore, national and local institutions will strengthen databases, access to climate information to better manage risks on ecosystems. Investment will contribute to the preservation and restoration of natural habitats and ecosystem integrity. Co-benefits are expected with the increased carbon sequestration and biodiversity conservation.

### **1.5. Innovation, sustainability and potential for scaling up**

In terms of innovation, the project will support local stakeholders (actors) to implement consistent monitoring and an information and data system to strengthen decision making for ecosystem management. This will be developed to facilitate the process to disseminate climate and environment information to interested actors within the project areas where information is currently limited. Innovation has also been integrated into the project's solution-based approach. The project will take into account gender concerns because the issue of degradation of natural resources and natural disasters (drought, salinity) affects men and women and vulnerable groups (children, young people and seniors) differently.

The fact that this project reflects priorities of local populations was confirmed during the project formulation phase. It has strong support from the people, the Senegalese Government and development partners both at the central and local levels. Through the implementation of adaptation initiatives at the community level, the project aims to ensure that local communities have effective ownership of the adaptation solutions and, thus, sustainability and replication of the promoted solutions.

Another guarantee of project sustainability and replicability is its anchoring in the Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) of the Ministry of Environment and Sustainable Development (MEDD), as well as the involvement of several branches of the State at various levels including ANACIM, which will be crucial, particularly for Components 1 and 3 of the project and the Ministries of Agriculture, Livestock, Water, etc. The project will provide support to the entities to strengthen their capacities in line with their role in the project. The project team will be based in close proximity to the communities and a number of civil servants will be identified, equipped and trained in order to work with the project team and closely monitor project activities and results. Along the same line of ensuring the project's sustainability, a strategy for replicating site-level interventions will be developed.

The various planned capacity building activities will also help ensure the sustainability of project activities but will also multiply the effects and replicate the results achieved by other stakeholders. The long-term project viability and sustainability will depend greatly on its 'institutionalization' of capacity built by the project. All capacity building activities foreseen in the project have been planned so as to have a lasting impact, both at the local and national levels, e.g. training components will be planned based on needs assessments. The project will equally build on the 'multiplier-effect' of training trainers. The envisaged training of the population and extension services will build their capacities and will create the conditions for sustainable resilience and local development, by fostering the emergence of community groups capable to act appropriately and in sufficient time to reduce the possibility of harm or loss. The developments, which will be carried out at the request of beneficiaries, will use simple techniques that are adapted and easily grasped by the populations.

Activities for Component 3, designed especially for the scaling-up of project experiences, will be used to ensure sustainability and replicability of project activities and results. Therefore, through the various communication and dissemination methods to share project experiences, including visits between the different communities for sharing, planned in Component 3, it is envisaged that the promoted adaptation solutions will be replicated in other

communities. This component will help the project results to influence local and regional policies, strategies, plans and programs in the target areas, especially ensuring intervention sustainability and replicability. Lessons learned from this project will be compiled and disseminated to a broad range of stakeholders. The project will also make frequent contributions to the adaptation learning mechanism (ALM) to ensure that lessons learned will benefit other stakeholders within the entire portfolio of LDCF projects, in particular, and of the GEF as a whole.

#### A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.

This project is consistent with LDCF strategy, eligibility criteria and financing strategy.

*Consistency with LDCF/SCCF strategy:* the proposal is aligned with the focal area objective 2 “Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level” and objective 3: Promote transfer and adoption of adaptation technology. It is specifically aligned with outcomes linked to these objectives including increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas, strengthened adaptive capacity to reduce risks to climate-induced economic losses, successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas and enhanced enabling environment to support adaptation related technology transfer.

*Ownership:* Senegal is a Party to the UNFCCC, having ratified it on December 1994. The country is also a signatory of the Kyoto Protocol since 2001. As required by the UN Framework Convention on Climate Change, Senegal prepared the first National Communication in 2000 and completed the National Adaptation Plan of Action (NAPA) in December 2006. These reports are prepared with the support of the National Committee on climate changes (COMNACC) and through a participatory approach involving all national stakeholders involving diverse stakeholders. The country is also hosting the Interim Secretariat of NEPAD.

*Compliance with programme and LDC Fund policies:* Senegal is among the least developed countries (LDCs), thus making it eligible for funding from the Least Developed Countries (LDC). The proposed project is consistent with the strategic objective of the LDCF fund to promote the LDCs’ “climate compatible” development options and support the achievement of the MDGs under conditions of climate change. The project complies with the NAPA rules and procedures and represents the response of Government of Senegal to urgent and immediate adaptation needs.

*Financing:* The project is designed to reflect the additional adaptation costs of priority actions identified in the NAPA and builds on several other projects and programmes. The co-funding for this project is also within the stated guidelines with more than \$ 10 m in prospective funding. These amounts will be clarified during the project preparation phase. It should be noted that the among likely co-financing is twice the amount required by the LDCF guidelines for the amount of LDCF resources being requested by the Government of Senegal for this project.

*Institutional Synergy and Coordination:* The implementing partner is the Ministry of Ecology and Nature Protection (MENP). MENP will delegate specific project activities to appropriate ministries, including the Ministry of Decentralisation, the Ministry of Livestock, the Ministry of Agricultural, the Ministry of Water, etc. Sub national authorities, civil society (women and youth associations, NGOs, media, Community Based Organizations) and the private sector will be important partners of the project and will be provided with adequate space to contribute. The COMNACC and its break-up at regional level (COMRECC-established through UNDP support) will also play a great role in identifying, disseminating and supporting adoption of relevant adaptation options. Details of the institutional arrangements will be spelt out during the PPG phase.

*Monitoring and Evaluation:* The implementation of the project’s activities will reflect GEF monitoring and evaluation standards and procedures as well as UNDP guidelines on monitoring and evaluation of projects on adaptation policy. As the project will be on NIM modality, the national Cellule of Project Coordination (CAP) will ensure the compliance of the Project monitoring and evaluation with Senegalese Procedures. Details for monitoring and evaluation will be articulated during the project development phase.



### A.3 The GEF Agency's comparative advantage:

Present in Senegal since 1975, UNDP is supporting the efforts of the Senegalese Government in improving the living conditions of communities in line with the priorities identified by the Government through its planning frameworks (DSRP, SNDES, PSE) and sectorial policy letters. Strategically, this support has contributed to: (i) integrate adaptation into national, sectorial and local planning; (ii) strengthen institutional capacity for adaptation; and, (iii) remove the political barriers and promote community management of natural resources. At an operational level, this assistance has contributed to: (a) the introduction of reliable and replicable methods of rehabilitation of degraded lands through integrated soil fertility management, agro-forestry and water and soil conservation, as well as the development of participatory management plans; (b) improve the participatory management of pastoral units and communal natural reserves, resulting in the reduction of bush fires and a fair legal access to farmland for farmers; (c) the establishment of savings and green credit institutions which funding is aimed at a sustainable use of natural resources; (d) the diversification of sources of income for the fight against poverty; and (e) the introduction of the eco-village model. These accomplishments have been achieved through partnerships including with the GEF.

Based on areas of cooperation identified in the Country Program Action Plan (CPAP) 2012–2016 jointly signed between UNDP and the Government, “the support for adaptation to climate change” is one of three priority areas of the program cycle. The UNDP assistance has two components: (i) supporting the formulation of national policies resilient to climate change; and (ii) developing pilot sites resilient to climate change. UNDP supported the government efforts in the implementation of the Senegalese component of the Africa Adaptation Project. Support was provided to integrate adaptation to climate change in key development sectors and processes. With the “boots on the ground” Program, UNDP has placed national officers in 24 country offices (including Senegal) to provide policy support to governments on climate change.

At the local level, UNDP supports the effective implementation of the Climate Change Territorial Approach (TACC). This project is part of a partnership between the UN and decentralized government bodies, to promote climate friendly development at the subnational level. The TACC project supports the integration of climate change adaptation and mitigation measures in development plans thru: (i) the development of partnerships with the United Nations and its specialized agencies, national governments, sub-national centers of excellence, regional technical institutions and the private sector; (ii) the provision of methodologies and tools, and best practices sharing for participatory long term planning of climate change related development in the regions and cities; (iii) provision of information on the challenges and opportunities of climate change and the technical and financial solutions for the regions; (iv) Provision of technical support for the preparation of integrated territorial climate plans, including the identification of mitigation and adaptation priority measures; and (v) Provision of technical support to identify policies and financing instruments to implement priority climate change adaptation options. The TACC project in Senegal is implemented in six regions (Fatick, Louga, Kaffrine, Tambacounda, Matam and Saint Louis).

Finally, at the institutional level, UNDP has supported the Government of Senegal to improve its capacity to absorb resources, including the introduction of mechanisms through support units for projects and programs within the Ministry of Economy and Finance. Currently, several technical and financial partners of Senegal use these mechanisms. This reflects the recognition of UNDP's effectiveness in improving the country planning capacity for project monitoring and control, transparency and tracking of external resources spending.

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

#### Baseline for Component 1

LDCF financed project will take advantage of the Senegalese National Agency of Civil Aviation and Meteorology (ANACIM) exiting capacities to coordination of all operations for meteorology and climatology research in the country

and to collect, analyze and disseminate weather forecast services. The project will benefit from ANACIM's existing network of meteorological stations spread throughout the country. In the project target areas, ANACIM manages two synoptic stations in Cap Skirring and Ziguinchor and three agro-meteorological and climatological stations in Thiès, Kolda and Louga. ANACIM is also providing regular agro-meteorological and weather information on a daily, weekly, monthly, yearly and 10-year basis (<http://www.meteo-senegal.net/html/prdmto.htm>). Furthermore, the LDCF funded project will benefit experiences of ANACIM on community early warning system. Within the framework of the "Climate Change, Agriculture and Food Security" project, ANACIM implemented a pilot project in Kaffrine to demonstrate to farmers the added value of climate information in agricultural production. For this purpose, the following model was implemented: (i) identification of producers' needs in terms of climate information and advisory services, ranging from seasonal forecasting to 10-day and daily forecasting; (ii) combining scientific and endogenous climate forecasting methods; (iii) creation of a local multi-disciplinary working group (GTP) bringing together technical services for agriculture, livestock farming, weather, research, fishing and local communes; (iv) capacity building for producers, government officials, community radio announcers and NGOs to gain understanding of forecasts; (v) setting up test fields to assess the added value of climate forecasting; (vi) collection of rainfall data with the goal of assessing forecasts (seasonal and intra-seasonal); and (vi) assessment by producers of the communications system and products. The expected co-financing associated with **ANACIM activities is US \$ 3.5 Million** during the 5 years cycle of the project, taking into account all investments related to meteorological observation network, maintenance, and functional operations (see attached co-financing letter from the General Director of ANACIM). Despite this government's investment, the coverage of meteorological stations remains insufficient to effectively identify risks and predict potential impacts associated with climate change on land and ecosystems. In addition, the use of global and regional climate models (such as GCM, PRECIS) does not generate sufficient information to effectively predict the impacts of weather patterns at a local level. There is a need to refine strategies at the local level, in terms of adaptation, downscaling, refining prediction, to make it more informative for a much localized adaptation option related to decision-making.

With a co-financing estimated to be **US \$ 1.5 Million**, the Ministry of Environment and Sustainable Development (MEDD) established ecological data and monitoring systems across its technical departments to make availability information on the condition of natural resources and the environment, and strengthening operational, technical, and institutional capacities of the State and local communities.

- A national monitoring framework is developed by MEDD with operational environmental and socioeconomic indicators to quantitatively assess the state of the environment and pressure on natural resources. This framework is articulated around nine strategic priorities: (i) management of forest and wildlife potential; (ii) promotion of good citizen behaviour for the environment; (iii) preservation of the marine and coastal environment; (iv) promotion of popular participation and involvement of the private sector and local communities in managing natural resources and the environment; (v) improving the knowledge base of natural resources and the environment; (vi) strengthening the technical and institutional capacities of the State and local communities; (vii) contributing to conserving the global environment; (viii) controlling surface waters to improve agriculture-forestry-pastoralism and fish production; and (ix) control and operation of the multi-year expenditure.
- The Directorate of Water, Forests, Hunting and Soil Conservation has a long history — since 1973 — in the management of natural resources and the environment. It plays a key role for forest resources and has a vast network of Regional Inspections (IREF) that is well established in all regions under its authority. It operates mainly in the management of forests, wildlife, and soil conservation.
- Since 1987, the Ecological Monitoring Center (CSE) regularly monitors parameters related to vegetation (pasture), brushfires, rainfall, agriculture and livestock productivity, with the use of advanced technology such as satellite data. CSE use Geographic Information Systems (GIS) as management tools and for interpreting environmental and land use information. CSE publishes a yearbook on the environment and natural resources, as well as a report on the state of the environment in Senegal, making it easy for various national institutions to access information.

The collaboration needed between institutions involved in the production of climate information, on one hand, and its use at a national or local level, in the other hand, is very limited in the Niayes and Casamance. Relevant ecological, hydrological and socio-economic data remain scattered and managed by several institutions. Without collaboration for

access to socio-economic and environmental information, the meteorological department has trouble estimating risks in areas such as agriculture, fisheries, water resources, and forest ecosystems, including mangroves. Although some limited information on climate (based on weather monitoring and some short-term forecasts) are available, information on specific risks for different sectors is also missing due to the lack of appropriate vulnerability analysis. The information provided by the current system is also not useful for sustainable land management and ecosystems. Moreover, the non-translation of climate information into formats that are easily understood by technical extension services (agriculture, forests, livestock, etc.), makes it of limited use.

Other relevant initiatives (non part to the co-financing). The General Directorate for Water Resources Management (DGPRE) monitors a network of close to one hundred (100) hydrometric stations located between the basins of the Senegal River, the Gambia, the Casamance River, the Kayanga Sine Saloum and small coastal basins. The data collected are used to develop hydrological weekly bulletins during floods and monthly during low flow periods, edit hydrological directories and to conduct studies on the behavior of rivers. DGPRE also established the integrated information system on water (SIIE) to improve the data management of water resources and their uses. As a tool for decision support, and for quality and sustainability of data assurance, this unifying IT platform is improving the accessibility of water data and information for professional users and the public. In the framework of the proposed LDCF funded project key linkages will be established with DGPRE database.

### Baseline for Component 2

With a **co-financing of US\$ 2 millions**, the Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) is coordinating the “**Economic Development of Casamance Programme**” (PADEC) that operates in the regions of Kolda, Sédhiou and Ziguinchor for the enhancement of small farmer agricultural production in Casamance. This baseline is supporting the emergence of economic sectors with high added value. It targets domestic fruits (mango, banana etc.) and non-timber forest products (cashews, honey etc.). Through a structural approach for value chains, beneficiary producers draw their income from the production, processing and marketing of agricultural and non-timber forest products. The project also strengthens local capacities of extension services for greater supply of services to operators. This project should also include climate change aspects, particularly when supporting the implementation of agro-forestry plantations (plant materials used, adopted technology, etc.) for promising sectors (cashew, mango, etc.) to secure investments.

DEFCCS is also implementing agro-forestry development activities under the **Economic Development and Management Program of Niayes** (PADEN) in support of strengthening the capacities and skills of extension services and market garden producers. With a **co-financing of US\$ 2 million**, this baseline is enhancing entrepreneurship capacity of about 17,000 producers (women and men). The project provided farmers with access to agricultural inputs and land to grow onions, cabbages, tomatoes, potatoes, peppers and parsley. However, the project has not included adaptation of socio-economic activities to climate change. This climate change and variability aspect increasingly exposes people to instability and food insecurity due to their vulnerability to climate change and variability impacts on market garden crops (decreased rainfall, shallow draft and salinization of groundwater, sea spray and harmattan, unsuitable technical agricultural package, etc.).

### Other relevant initiatives (non part to the co-financing)

DEFCCS is also implementing the Programme to promote rural electrification and a sustainable supply of domestic fuel (PERACOD-Ziguinchor and Kolda regions) to strengthen the technical and financial capacities of local communes and the forest service for large-scale implementation of a strategy aimed at ensuring sustainable provision of household fuel. With this investment, the management plan of Kalounayes forest is realized and forest inventories in the region of Kolda are on-going. Given the high pressures on forest resources in a context of climate change with negative forecasts for the rainfall regime in the area, key actions are needed to reinforce the natural stands, while taking into account the severe erosion of these plant genetic resources due to climate change and human pressure.

### Baseline for Component 3

Several efforts are undertaken to strengthen capacity for extension services, producers and local deciders on participative and sustainable environmental governance. The Senegalese Government has made substantial efforts in improving the quality of extension services by expanding the knowledge base on natural resources and the environment,

by the availability of information on the condition of natural resources and the environment, and strengthening operational, technical, and institutional capacities of the State and local communities to improve working conditions at the Ministry. In this framework, the Forest Training Center in Thiès is playing a central role in training or upgrading skills. Since 1991, the Centre has strengthened the technical and operational capacity of over 5230 staffs in the following areas: environment & natural resource management, wetlands management, coaching of women association on organisation and training local deciders on decentralization of resources natural (knowledge on policies). The competencies of the Forest training centers will be used to support development of local capacities on climate changes. The co-financing from the MEDD will be **US\$ 0,5 million**.

Training activities are also undertaken under projects implemented by DEFCCS in target regions. With PADEN, producers are improving their skills in planning and coordination of socio-economic development; and extension services on programme and project management. In addition, 9000 producers are trained on marketing and finance. With PADEC, about 150 stakeholders are trained on gender issues and 540 stakeholders trained in product marketing. However, the institutional and technical capacity to properly manage and protect natural resources against the negative impacts of climate change must be reinforced by a mechanism, in order to share and transfer information and knowledge more effectively. Co-financing from ongoing capacity building activities is **US\$ 1 million**. Despite the recognition of the critical role of local institutions in the management of natural resources, a systematic analysis has never been done to identify factors for successful performance to strengthen climate resilience and the support needed by these services to strengthen their role in facilitating adaptation to climate change.

Finally, the UNDP's baseline "*Programme on Coastal and marine resources Governance in the West African*" is developing capacities of communities and technical management of the coastal zone. With a co-financing of **2 millions**, community organisations using mangrove ecosystems and marine protected areas managers are improving their technical competencies and also on the use of suitable technologies for the rehabilitation of coastal ecosystems.

A. 5. [Incremental /Additional cost reasoning](#): describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated [global environmental benefits](#) (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The purpose of this project is to contribute to this goal through its objective of strengthening an enabling environment for adaptation measures based on ecosystem management in the eco-geographic areas of Niayes and Casamance. Specifically, this includes improving or strengthening land and ecosystem management in the face of climate uncertainties that prevail in these two areas, particularly through: (i) good climatic forecasting and effective diffusion/use of climate information; (ii) strengthening the capacities of decentralized technical services, local leaders/decision makers, grassroots communities and individuals; (iii) better assessment of the vulnerability to climate change and the effects of adaptation; and lastly, (iv) demonstration, autonomous adoption and promotion of adaptation solutions or technologies able to reduce risks related to climate change in the Niayes and Casamance regions. The project will be developed around the three main components.

**Component 1:** Information platform on climate change and socio-environmental aspects to identify vulnerabilities caused by climate change and propose effective adaptation options in the Niayes and Casamance regions.

**Outcome 1:** Information management systems to determine and monitor the impacts of climate change on ecosystems are implemented for effective forecasting, preparation and decision-making.

Without project intervention, communities, and particularly women groups and small farmers, are simply lacking of access to information that would facilitate climate risk management. The current mix of seeds/crop production is not associated with regular consideration of seasonal forecasts, an important input in the face of increasing temperatures and a greater frequency of variation in rainfall. In alternative scenario that is enabled by the LDCF funding, the delivery of climate/ecological information & projections will be improved for land and ecosystem sensibility, adaptation and vulnerability assessment, monitoring and planning. In order to cope with the noted and forecasted harmful impacts of climate change, it is necessary to implement medium- and long-term strategies based on climate and meteorological information products and services in the project target areas. For this, it is imperative to install well functioning system for generating climate and meteorological information; and an efficient communications system for this information.

Consequently, it is necessary to: (i) on the one hand, renovate some meteorological stations and, on the other hand, set up new stations in the two project areas; (ii) implement an effective system to collect and transmit meteorological data; (iii) strengthen the capacities of monitors and producers of climate and meteorological data in order to provide producers, decision makers and local communities with localized meteorological information; (iv) implement an information system on climate services in the project area; (v) strengthen the capacities of various actors (final and intermediate users) on the understanding and use of climate and meteorological information; (vi) strengthen the capacities of local decision makers on the integration of climate information in the various development programs and projects; (vii) strengthen the capacities of local media outlets in order to provide better diffusion of climate information, especially community radio stations; and (viii) set up an early warning system to monitor and manage natural disasters due to weather or climate.

## **Outputs & Activities**

***Output 1.1:*** *The climate, meteorological and hydrological network for the target areas and the capacities are strengthened in order to produce reliable data needed to monitor and analyze hydro-climatic phenomena*

**Activity 1.1.1:** Participatory identification of climate-information needs of potential users and a diagnosis of the network of climate, meteorological, hydrological and hydrodynamic observations.

The implementation of the hydro-climatic information platform will first require conducting a diagnosis of the system to collect meteorological and hydrological data, and then, to assess the needs in climate information for targeted populations in the context of this project (local population, technical services, locally-elected officials, local administration, etc.). Thus, an evaluation study of the hydro-climatic data collection system and a needs assessment among the various actors (policy decision makers, technical organizations, local populations, etc.) for hydro-climatic information will be conducted in the five administrative regions. A consultant should conduct this study. The results will be shared with all final users during a workshop to ensure they are consistent with the actual needs expressed in the field. Specific actions include:

Mapping of the system for meteorological and hydrological data collection in Niayes and Casamance;

Identification of local actors' specific needs in terms of agro-hydro-meteorological advice and climate information (ranging from seasonal forecasting to 10-day and daily forecasting);

Sharing results of these two studies with local policy decision makers, institutional actors and final users.

**Activity 1.1.2:** Acquisition and installation of hydro meteorological instruments

This will involve rehabilitating and/or strengthening the network for meteorological and hydrological observations in the five-targeted administrative regions to better monitor changes in the climate and hydrology of the various waterways. Specifically, five automated meteorological stations (automatic collection and transmission via GPRS) will be installed in the regions of Louga, Thiès, Ziguinchor, Sédhiou and Kolda to collect data on temperature, rainfall, sunshine, wind, humidity, evaporation, etc. In addition, in each of these regions, the network of rainfall stations will be made denser. Therefore, 40 rainfall stations will be set up in each region. In an effort to monitor the impact of the swell on the mangrove, a marine station will be installed in Tobor for measuring wave height (swell) and conventional parameters. For this, ANACIM will be responsible for: (i) identifying sites to set up the different measuring points in accordance with WMO standards; (ii) participating in the selection process for meteorological equipment vendors; and (iii) installing all the equipment (automated meteorological stations, automated rainfall stations and the marine station). In addition, for monitoring in real time and forecasting of the various hydrological phenomena, four automated hydrological stations will be installed in the regions of Sédhiou, Kolda, Ziguinchor and Louga, in partnership with DGPRES. These stations will make it possible to measure the flow and height of various waterways. In close coordination with ANACIM, the DGPRES will be responsible for: (i) identifying the sites to set up the different hydrological stations; (ii) participating in the vendor selection process; and (iii) installing the equipment.

The management and use of hydro-climate data will require, on the one hand, implementing a database management system at ANACIM and DGPRES, and, on the other hand, a system to analyze these data. For this, two servers, three workstations (high-capacity computers), one climate model, one atmospheric model and one hydrological model will be procured. Specific actions include:

- Signing of protocols among DEFCCS, ANACIM and DGPRES;

- Identification of installation sites for measuring points by ANACIM and DGPRE;
- Development of technical specifications related to ANACIM and DGPRE; and
- Procurement and installation of equipment.

**Activity 1.1.3:** Training of technical staff (weather, hydro, agricultural, etc.) and producers on data collection, processing and analysis

Within the framework of implementing this information system, capacity-building training sessions for the management of equipment and use of data will be organized for staff from ANACIM, DGPRE and the Directorate of Agriculture (DA) as well as for producers. Thus, the following staff will be trained:

- Three meteorological forecasters on the forecasting models (meteorological and climate) to develop forecasts related to natural-disasters management and food security;
- Three hydrologists on the hydrological model that will be acquired for improved water-resources management in the target areas and especially for the development of warning products on flooding risks of the Casamance River;
- Two agro-meteorological technicians for the development of agro-meteorological information products for food security and resources management;
- Five monitors to collect meteorological data and manage different stations that will be upgraded; and
- Two maintenance technicians for the monitoring and management of meteorological equipment.
- In addition, training sessions for both the farmer-monitors and staff from the DA will be held on the collection, diffusion and interpretation of rainfall data in local languages.

Data collected at the meteorological and hydrological stations and at the rainfall stations will be analyzed by ANACIM and DGPRE, with support from DA, the Directorate of Livestock Breeding and other institutional actors, for the publication of agro-hydro-meteorological bulletins adapted to the needs of various users (producers and local decision makers). Specific actions include:

- Identification of actors (participants and trainers), training modules and training tools;
- Organization of at least one workshop on forecasting models for technicians from ANACIM and DGPRE;
- Organization of at least one workshop on meteorological data collection and equipment maintenance for technicians from ANACIM and DGPRE, DA and local producers;
- Organization of at least one workshop on agro-meteorological information products and the meteorological data interpretation for technicians from ANACIM and DGPRE, the Directorate of Agriculture, the Directorate of Livestock Breeding, media outlets and local producers; and
- Monitoring and evaluation of training.

***Output 1.2: An integrated information system producing climate information and generating the products needed to identify risks related to climate change (e.g., maps for risk, vulnerability, etc.) is developed to help identify efficient adaptation options and develop actors' capacities in adaptation***

**Activity 1.2.1:** Implement a climate database (correlated with socio-economic and environmental data) and assessment tools to measure vulnerability due to climate change.

The management and use of hydro-climatic data will require the implementation of data management systems. For this, a management system for data collected from the various meteorological and hydrological stations will be implemented both at ANACIM and DGPRE. Transmission between the two databases will be done automatically using a GPRS network of one of the existing mobile telephone operators. This system will allow producers to have near real-time climatic information to better manage risks through an effective early warning system. This system will be combined with various socio-economic and environment data for the publication of a bulletin for each region with complete

information on food security that will be disseminated to various users and shared with the National Council on Food Security (CNSA). Specific actions include:

- Signing of partnership protocols between ANACIM technical services, DGPRES and the technical services of Agriculture, Livestock Breeding and the mobile operator;
- Development and production of the database;
- Preparation of the model for the information bulletin that will be published regularly and shared within the framework of establishing the platform (see output 1.3).

**Activity 1.2.2:** Using a participatory approach, analyze the sensitivity and exposure of targeted ecosystems (Niayes, mangrove, Kalounayes forest, etc.) as well as the means of subsistence in the face of climate change, both past and future (in 2030, 2050 or 2100) and estimate their impacts.

An evaluation study will be conducted in the context of this project to: measure the degree of vulnerability in the project targeted ecosystems as well as the means of subsistence for local communities in the face of harmful impacts of climate change already observed; and measure the expected risks due to warming predicted for the near (2030), medium (2050) and distant (2100) future. The goal of this study will be to estimate the observed and future impacts due to climate change in the various targeted ecosystems and on the people's livelihoods in the target areas. These time periods were selected by taking into account the time horizons included in the medium- and long-term planning documents for the national (Plan Sénégal Émergent, Sénégal Prospective 2035) and local level. Specific actions include:

- An assessment of ecosystem and socio-economic vulnerability in the Niayes and Casamance regions;
- An assessment of current and expected climate risks for the various productive sectors in the short-, medium- and long-term; and
- Sharing study results with local policy decision makers, institutional actors and final users.

**Activity 1.2.3:** Identify the adaptation options for local communities and the resilience of ecosystems and analyze the cost-benefits of various options.

A study will be conducted with the following objectives: (i) identify the climate forecasting methods that have been endogenously developed by communities; (ii) identify the various adaptation options implemented by local communities in the face of observed climate change; and (iii) analyze the advantages and costs associated with these various adaptation strategies for each of this project's target regions, as well as the options for improvements in light of the opportunities offered by meteorological and climate forecasting. A consultant will conduct this activity.

**Output 1.3:** *A platform for sharing information is established to support the management of climate risks and long-term planning for adaptation.*

**Activity 1.3.1:** Identify the existing sharing platforms (e.g., GTP, Infoclim, Siena, etc.), and evaluate their effectiveness and sustainability and models for collaboration.

A study aimed at conducting an inventory of the various existing platforms on climate information in the various target regions across the country and at the sub-regional level will be conducted. This will involve identifying them; describing how they function and the roles of the various stakeholders; assessing their strengths and weaknesses, indicators of their sustainability; and the means for collaboration and sharing information that can be implemented. A consultant will conduct this study.

**Activity 1.3.2:** Establish a functional and sustainable system for sharing climate information and vulnerability assessments for local actors (local governments, technical services, producers and households).

This will involve improving and replicating the early warning system (EWS) model developed by ANACIM within the framework of the CCAFS program in Kaffrine. Each council will undertake:

- Identifying producers' needs in terms of climate information and advisory services, ranging from seasonal forecasting to 10-day and daily forecasting (see activity 1.1.1);
- Combining scientific and endogenous climate forecasting methods;

- Creating a regional platform in the form of a local Multi-disciplinary Working Group (GTP) whose mission is to provide ongoing monitoring of the meteorological/climate, hydrological and agricultural situation and to warn communities in time through the intermediary of the technical services of the agricultural and rural council present in all rural communities to avoid the disasters that rural households might face. This working group brings together the technical services in agriculture, plant protection, livestock breeding, meteorology, research and fishing; the administrative authority coordinates it. Each technical service, for its respective domain and in accordance with its mission, collects, analyzes and presents the current situation and 10-day prospects for its sector. In addition to the technical services, this working group will also include members who represent local media outlets and local NGOs. Thus, every 10 days, all GTP members will meet to evaluate the evolution of the growing season. Following each meeting, an information bulletin will be published and disseminated;
- Capacity building of producers, State actors, community radio announcers and NGOs on understanding climate forecasting, and especially their integration into their production system;
- Implementation of a test field to assess the added value of forecasting on production systems. Each year, demonstration fields will be installed to meet the extension needs for each site. Therefore, based on the seasonal pattern, inputs (seeds and fertilizer) and a mobile phone will be distributed in each site to target farmers (among those who will undertake the management of rain gauges and have at least a one-hectare plot);
- Collection of rainfall data to use for the evaluation and demonstration of forecasting (seasonal and intra-seasonal); and
- Evaluation of the communications system and the products included in the system

**Activity 1.3.3:** Create a network between the sharing system discussed in the project activity above with other existing information systems on food security and the environment.

Based on the results of the study on “Identification of existing sharing platforms – Activity 1.3.1” and to make the various implemented platforms more sustainable, these will be directly linked to the national GTP, CNSA, and CSE, which plays the same role with a broader vision in terms of information. At the sub-regional level, the existing platforms will be leveraged (AGHRMET, ACMAD, RPCA, etc.). In addition, this system will serve as a technical arm for the various existing platforms in the various target areas (e.g., COMRECC set up in the various regions). Therefore, representatives of these platforms will have access to the various training activities offered in the context of this system. Specific actions include:

- Implementation of an electronic platform for sharing information linked to the existing platforms at the national and sub-national level; and
- Organization of at least one sub-regional workshop for sharing, bringing together the existing platforms in CILSS space.

## **Component 2: Reducing climate change risks in target ecosystems and land with adaptive restoration measures**

**Outcome 2:** Adaptation options based on ecosystem management in the two target areas (Niayes and Casamance), including the adoption of ecosystem and land management practices resilient to climate change, reduce the risks caused by climate change in these areas.

In the absence of the proposed initiative, farming production capacities in the targeted sites will remain low due to the fragility of the natural resource base, the weak use and low availability of farm inputs and water, high dependence on rainfall. The agricultural productivity will continue to be threatening by drought and desertification impacts with sand encroachment of the soil due to dune advancement, diminishing of water table levels and salinization of ground water. Market gardening production is the main source of income and means of support in the local communities of the Niayes area, which provides nearly 60% of the national vegetable production. Despite the appropriateness of the implemented strategies and resources mobilized, including the climate change aspect in current and future interventions is more than necessary, given the vulnerability of local communities who primarily depend on market garden crops. The abandon of rice-growing valleys in the Casamance will continue due to the lack of means to rehabilitate them Local capacity to



adopt resilient practices and techniques in the face of climate change will remain weak. In the alternative scenario made possible by the LDCF funding, the exposures to climate risks will be reduced through the adoption of climate resilient management practices in land and ecosystem management.

The alternative is to promote proven agro-forestry technologies that are resilient to climate change to better protect market garden basins from silting up from sand dunes and also provide close protection for crops from winds (trade winds and harmattan) and heat. Faced with the downward trend in rainfall, special emphasis will be placed on saving water through the promotion of micro-irrigation. Support will be provided for research-development activities to adapt the technical agricultural package for horticulture and agro-forestry production systems to a changing biophysical context based on agro-meteorological and climate forecasts developed within the framework of this project.

As for the Niayes area, it will be necessary to fill the gap with respect to integrating the climate change and variability aspects in ongoing (baseline) projects and programs in the eco-geographic area of Casamance. The PRGTE interventions will include support to local communities in mangrove management and restoration in Casamance. In the forest, PERACOD achievements must be strengthened in Kalounayes and Kolda through the development and implementation of management plans in extensive forests inventoried in a climate change context. This will also involve including the climate information aspect in the agro-forestry projects and programs that are underway or planned for the next five years (e.g. PADEC) in Kolda, Sédhiou and Ziguinchor in addition to recommending adaptation strategies and solutions. The interventions will also involve promoting the development of palm and borassus groves around the agricultural areas, income generating activities (IGAs) for women, adapted agro-forestry and agro-pastoral practices, and the watershed approach for soil restoration, and water and soil conservation, all adapted to the new climate conditions.

## **Outputs and Activities**

**Output 2.1:** At least 100 hectares of mangrove plantations are restored to reduce the impact of swell and coastal erosion.

**Activity 2.1.1:** Regeneration/restoration of 100 ha of mangrove in Tobor (Ziguinchor) and Diendé (Sédhiou)

In Tobor and Diendé, soil and water salinization due to decreased rainfall is accompanied by degradation of the mangrove ecosystem in the estuaries, which are replaced by acid sulphate soils that compromise the availability of fishery resources. To deal with this, a management plan integrating meteorological and climate forecasting will be developed based on a contract with a service provider under the supervision of the forest service. It will be followed by the regeneration/restoration of 100 ha of mangrove in partnership with the NGO Oceanium, on the Tobor site, based on a Memorandum of Understanding backed by a technical program under the supervision of the water and forest services. The same approach will be selected with the NGO Enfance et Paix in Diendé. Specific actions include:

- Development of mangrove restoration plan taking in account medium and long term climate changes;
- Memoranda of Understanding with the NGOs Oceanium and Enfance et Paix to undertake restoration activities;
- Regeneration/restoration of 100 ha of mangroves in Tobor and Diendé;
- Evaluation and adjustment of the application of the mangrove restoration plan and sharing experiences for potential scaling up.

**Activity 2.1.2:** Develop and apply techniques for sustainable farming of mangroves in the forest reserves of Ziguinchor and Sédhiou to prevent cutting and degradation of these forests.

This will involve supporting IGAs (oyster farming, fish farming, etc.) related to sustainable management of mangrove resources to support women's groups from villages located in the intervention areas of Tobor and Diendé. The IGAs will be rolled out in partnership with the National Aquaculture Agency (ANA) based on a Memorandum of Understanding under the supervision of the regional fishing service. Specific actions include:

- Participatory identification of IGAs, targeted Women's Advancement Groups (GPFs) and partnering mutual schemes;
- Supporting at least 20 women groups in implementing IGAs (oyster farming, fish farming, etc.)
- Socio economic and environmental assessment of the impacts of IGA in livelihood and the mangrove ecosystems

- Advisory and supervision by ANA and the regional fishing service.

**Output 2.2:** Multi-purpose community forests resilient to climate change tested in the vegetable gardens of Niayes to protect crops from wind erosion and prevent encroachment by sand dunes.

**Activity 2.2.1:** Identify the best-adapted forest species and suitable technologies for better protection of market garden basins from silting up as well as market gardening technology packages adapted to the biophysical context. The research-action will be realized on the most adapted forest species and the most effective agro-forestry technologies to protect market garden basins and plots. The specific activities are:

- Identify climate resilient forest species adapted to the Niayes area and effective agro-forestry technologies for the protection of basins and market garden plots;
- Update the technical sheets for market garden crops regarding climate changes impacts;
- Dissemination of research results

**Activity 2.2.2:** Planting of 110 ha of windbreaks around individual market garden basins to protect them from silting up and provide close protection of crop plots from the harmful impacts of winds (harmattan and trade winds).

Adapted agro-forest species will be planted to ensure close protection of market garden basins on vulnerable sites in the communes of Léona (35 ha), Kab Gaye (35 ha) and Mboro (40ha). The direct costs for planting are estimated at US\$ 600/ha. The forestry service will submit an annual work plan for the planting operations for each site. It will provide supervision of the work to be done with local communities organized into groups who are also in charge of surveillance and maintenance until completion. Specific actions include:

- Identification and mapping of market garden basins to be protected by site;
- Production of plants with adapted agro-forestry species;
- Planting windbreaks close to market garden basins and crop plots, totaling 35 ha in Léona, 35 ha in Kab Gaye and 40 ha in Mboro by the end of the project.
- Supervision and advisory support from the forest service to producers groups for the roll-out of activities: plant production, planting and plantation maintenance and surveillance;

**Activity 2.2.3:** Set up 60 ha of micro-irrigation systems to save water in pilot market gardens

The micro-irrigation devices will be installed by a service provider based on a contract for the provision of services under the technical supervision of the agricultural service. The agricultural service will be in charge of verifying the quality and technical certification of the work. The average cost is estimated at US\$ 1000/ha. Specific actions include:

- Participatory identification of pilot gardens;
- Realization of micro-irrigation in Léona (20 ha), Kab Gaye (20 ha) and Mboro (20 ha) and training producers on the use of systems.
- Advisory support and supervision from the agricultural services.
- Dissemination of results during regional fora for potential scaling-up.

**Output 2.3:** At least 10 community groups, particularly women's groups, will be supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies.

**Activity 2.3.1:** Reforest and apply natural regeneration techniques to 100 ha of palm grove with adapted varieties to reinforce the natural stands, while taking into account the severe erosion of these plant genetic resources due to climate change and human pressure.

Enrichment operations will be carried out in the valleys of Madina Findifé (Diendé CR in Sédhiou), Soukou (Saré Bidji CR in Kolda) in Tobor and Coubalan. Planting will be done based on an operation plan that will be executed under the

supervision of the water and forest service. The plants produced or procured by the forest service will be provided to the planters at a rate of 100 plants/ha. Specific actions include:

- Participatory identification of palm grove sites in the targeted valleys;
- Identification and training of pilot/planter community groups;
- Participatory completion of enrichment operations in the targeted valleys at a rate of 100 plants/ha with a goal of 100 ha at the end.
- Advisory and supervision support from the forest service;

Activity 2.3.2: Support at least 10 women's groups in conducting income-generating activities (market gardening, poultry farming, small livestock husbandry, forest product marketing, salt production, etc.).

Support will be provided through microcredit. The diversification of production activities will enable local communities to reduce the risks of insecurity and to cope with the dangers of climate change and variability. Specific actions include:

- Participatory identification of target Women's Advancement Groups (GPFs) and IGAs to develop;
- Realization income-generating activities (market gardening, poultry farming, small livestock husbandry, forest product marketing, salt production, etc.);
- Partnership with existing microfinance services to support women in their IGA (establishment of saving system, credit lines, training on entrepreneurship)
- Develop protocol with the relevant technical services (DRDR, livestock, fishing) to advice and supervise women groups.

Activity 2.3.3: Adoption of resilient agricultural technology packages (drought-resistant varieties, agro-forestry practices, etc.).

At least 200 producers will be supported to improve the resilience of the agricultural system in the Madina Findifé, Bakoum and Diendé valleys in Sédhiou and the Soukou (Saré Bidji) and Saré Oumar (Dioulacolon) valleys in Kolda. . Specific actions include:

- Participatory selection of producers and identification of needs;
- Organization of awareness raising sessions for producers on the use of improved seeds to enable producers' adhesion and adoption of the new technology;
- Organization and training of rural seed producers– At least 200 farmers, among them 50% women, in each site will be trained in seed production techniques. For each farmer, it will be provided seeds of drought-resilient crops to enable him to plant at least half a hectare of such crops
- Production of resilient seeds by 200 seed multipliers;
- Conservation & distribution of resilient seeds to at least 2000 producers
- Supervision and advisory by ISRA.

Activity 2.3.4. Restoration of 100 ha community forest in the Soukou valley watershed (Saré Bidji CR in Kolda) to protect riverbanks from soil erosion.

This will involve reforestation activities and the application of Soil Protection and Restoration / Soil and Water Conservation (SPR/SWC) measures to protect the watershed. A partnership agreement will be established between the project and the various decentralized technical services (DRDR, Water and Forests) to carry out the demonstration work in the Soukou valley. Specific actions include:

- Development of nurseries and production of local plant species. Women groups will be trained in nursery practices and production of local plant species;

- Reforestation of 100 ha community forest, carried out by the local population, in areas that have been classified as degraded;
- Realisation of banquettes (barriers) and half-moon (demi-lunes) and planting woody species to protect soil from splash erosion;
- Train communities in assisted natural regeneration techniques;
- Where necessary, local committees will be established to manage forest restored;
- Supervision and advisory by forest services

Activity 2.3.5: Combat bushfires in the Kalounayes forest to support regeneration effort of valuable forest species adapted to the biophysical context. A partnership agreement will be established with the forest service responsible for supervision of activities to benefit local communes and communities. Specific actions include:

- Identification of sites to treat and communities needs
- Acquisition of equipment and supplies to support 33 village committees to combat bush fires;
- Planting to enrich the forest with valuable forest species that are adapted to the biophysical context; and
- Advisory and supervision by forest services

### **Component 3: Support mechanisms for knowledge and information**

**Outcome 3:** Individual, household and community capacities will be strengthened in order to increase awareness about responses to climate change and effective support for adaptation efforts.

Without LDCF intervention, experiences in knowledge management and transfer of technologies related to needs for adaptation to climate change in the target areas, are in their earliest stages, and inexistent in most parts of the project target areas. In the baseline, current cross-cutting efforts to identify, codify and disseminate climate risks management tools and adaptation best practices and lessons learned are limited and insufficient, and knowledge-sharing among vulnerable communities on how to address a changing climate is poor.

With LDCF support, the individual and collective capacities of the various stakeholders—local and departmental advisors, CBOs and ministry staff at the national and decentralized level—will be strengthened by increasing their access to information on climate change adaptation technologies. The individual and collective capacities will be strengthened through training programs in the following areas: (i) planning that supports commune and departmental advisors to better integrate climate change in local development plans with the goal of improved governance of land and ecosystems in a context of climate change; (ii) consideration of climate information when planning and programming activities of coordinating bodies, such as the COMNACC and COMRECC; (iii) integration of climate information into technology packages disseminated by the technical staff of ministries in charge of extension services; (iv) inclusion of climate change related issues in school curriculum to develop a genuine culture built on climate risk management; and (v) training and capacity building for CBOs for better use of information and adaptation technologies in their various socio-economic activities.

Results drawn from the project experience will be widely disseminated to help scale up the project outcomes to various local, regional and national levels using various strategies and mass communication tools, but also: systems for sensitization and awareness-raising, such as intra- and inter-community exchanges; community networks, such as school teachers and their students; institutional systems, including national and international meetings and seminars; and scientific and technical publications in particular.

### **Outputs and activities**

**Output 3.1:** Local governments and decentralized technical services have the necessary capacities to support communities in implementing adaptation activities.

Activity 3.1.1: Train community advisors (60 members) from eight municipalities on the integration of risks and opportunities related to climate change and options for adaptation.

This involves mainstreaming the issue of CC, which often manifests in negative events that have a considerable impact on socio-economic activities and the sustainable development of land and ecosystems in the local and departmental plans for the project intervention areas. The commune and departmental advisors and officials who set local policies and strategies will be trained in the areas of: (i) risk management and (ii) governance in land and ecosystem management in a context of CC. This involves ensuring greater consideration of risks related to CC and the adoption of suitable adaptation mechanisms, both in the formulation and implementation of local development plans. A training session over a two-year period will be provided in each commune and department by COMRECC technicians with support from two national consultants, who specialize in decentralization and climate change, respectively. The training will be given on site in each commune to reach all advisors. The local development plans (PLD) and regional plans for integrated development (PRDI), as well as tools developed by the TACC and INTACC on CC, along with materials developed by the project, will be included in the training materials.

Activity 3.1.2: Train 200 staff from the extension services of the ministries (of water resources, agriculture, environment, livestock, etc.) on the management of climate risks and on using results from climate risk assessments and vulnerability to adjust regulations, policies and plans that govern land and ecosystem management.

Staffs from technical services are responsible for advising communes and local communities in the management of local development. They will be trained both to upgrade their skills and in the management of climate risks as trainers to train commune and departmental advisors in applying CC knowledge in their respective technical areas. The categories of staff and the types of training are defined as follows:

- Technical staff from national extension services (MAER, MEDD, MEPA, fishing, water, etc.) will be trained on taking CC into account in project and program planning and the preparation of development plans and policies. (50 staff)
- Technical staff from devolved and decentralized services and NGOs will be trained on including climate risks in the management and planning of socio-economic activities. (50 staff)
- The capacities of members of coordination bodies at the national (COMNACC, GTP), regional (COMRECC, GTP, CRD & CDD and ARD) and local level will be strengthened in planning and coordinating activities related to climate risk management and the implementation of suitable adaptation options. (100 staff)
- Training will be provided by experts from the relevant technical ministries who will have been trained in advance by a national consultant specialized in CC. Specifically this will provide ongoing training, available on demand, through regular sessions and through cascade training from the national level to the regional and local level. Two training sessions will be held annually, based on the two in country seasons (dry and rainy).

The training will emphasize risk prevention, agro-sylvo-pastoral and fishing adaptation mechanisms and the standards and regulations for land and ecosystem management in a context of CC. The specific topics will include: (i) assessment tools for socio-economic and ecosystem vulnerability; (ii) awareness-raising methods for local communities and their advisors; (iii) production techniques using climate information integrated into technical packages and technologies for each type of production; (iv) methods for climate risk prevention and management; (v) tools to monitor the application of extended technologies and to measure their performance and adaptability; and (vi) methods for scaling-up and replication of project results.

Activity 3.1.3: Train members of 100 CBOs, including 50 women's organizations, to use climate information and adaptation technologies in their socio-economic activities.

Producers' organizations (farmers, herders, foresters, fishermen, women oyster farmers, rice growers, market gardening producers, etc.) are very active in production and ecosystem conservation. They will improve their performances through training on the use of climate information and adaptation technologies. The main topics will deal with: (i) identification of the impacts of climate on the various means of production; (ii) defining needs for climate information; and (iii) adaptation technologies for various means of production and land and ecosystem conservation.

The training will focus on practical issues by integrating traditional technologies with modern methods for forecasting and climate risk management. This is to develop the interest of local communities to technological innovations related to CC, which remains an area that is still most unknown to even technicians, and more so to local communities. The

gender and youth approach will be given priority to ensure equal access for young men and women who are most disadvantaged in terms of access to technical information and production inputs, but are yet the best candidates for innovation and most vulnerable to CC.

Two training sessions will be held in each commune at the start and end of the cultivation cycle to ensure that the main stages for crop production and land management are fully taken into account. They will be provided by staff from the advisory organizations (government extension services, and NGOs) who will have already received the necessary training. The training sessions will be conducted with support of a national consultant.

**Output 3.2:** The benefits from implemented adaptation solutions are monitored and shared with government officials, target communities and partners to inform them about project results replication opportunities.

**Activity 3.2.1:** Capitalize on project achievements and experiences and develop relevant strategies and communication materials adapted to local communities.

The communities' use of climate information and adaptation technologies developed by the project is subject to the development of strategies and adapted communication tools. Effective communication strategies (institutional, social and educational) will be developed and integrate following subcomponents:

- **Institutional communication** will be based on existing or soon-to-be-created institutional sharing mechanisms between extension services, based primarily on various frameworks for dialogue and action (COMNACC, COMRECC, Harmonization Conference, CRD, CDD, CLD, etc.); (ii) the project's institutional system (Project Steering Committee, Project Implementation Unit etc.); (iii) partners (co-financing partners, in particular); and (iv) the monitoring and evaluation system to support regular sharing between the various institutional stakeholders. It will use various tools such as written correspondence, regular meetings and workshops, technical and scientific reports, telephone calls, emails, etc.
- **Educational communication** will emphasize environmental education geared towards local communities aimed at behavior change based on greater understanding of risks related to CC and the most suitable adaptation strategies.
- **Social communication** will emphasize broad diffusion of climate information thru mass medias, traditional mechanisms of information diffusion at the village-community, inter-village and commune levels. Such a system will capitalize on local knowledge and know-how by highlighting and disseminating traditional knowledge and best practices.

Various communication tools and media will build on one another to support one- and two-way transmission of climate information through: (i) the national network of Community Radio Stations relayed through local radio stations; (ii) a show entitled "Environment - Climate Change and Food Security" sponsored by organizations working in environmental and natural resources management; (iii) an agro-hydro-meteorological bulletin will be published at least every 10 days; (iv) a hotline will be set up in partnership with telecommunications operators to promote the transmission of meteorological information; (v) a project Web site will be set up to facilitate dissemination of information; (vi) opinion leaders and resource persons will be sensitized and mobilized to support the dissemination of climate information and to develop best practices for adaptation; (vii) mass communications methods such as radio, television, newspapers and internet will be used; (viii) traditional communication channels will be used: places of worship, markets, traditional communicators, palaver tree, storytelling, etc.; and (ix) toolkits (audiovisual, pictures, etc.). Communications tools will also include materials, such as posters, films, slide shows, theater, village bulletins, maps, text messages, etc. To do this, service provision protocols will be signed with various stakeholders, such as communication organizations.

**Activity 3.2.2:** Share project experiences with communities by organizing exchange visits or intra- or inter-community forums; information shows on radio and local, regional and national television; and through sensitization and information sessions.

To promote the scaling-up of the project's positive experiences at the local, regional and national level, local communities in the project intervention area will help extend the approach and results with project support into other communities; from one village to another in the same commune (intra-community) and from one commune to another (inter-community).

To do this, departmental and regional umbrella organizations that often focus on several communes will be mobilized to act as intermediaries between the project areas and other areas, thereby facilitating the rapid replication of project results. Thus each year, based on the forthcoming results and at the opportune time, an intra-community visit for experience sharing will be organized in each commune, followed by forums at the intra- and inter-community level to better demonstrate and disseminate the results. In addition, in order to scale up from the local to the regional, and even national, level, mass diffusion methods will be used, such as: (i) community-based radio stations with a monthly or bi-weekly show on the project activities and results; (ii) spots and an annual televised documentary; and (iii) traditional systems for sharing information (word of mouth, palaver trees, weekly market, pilot farmers, etc).

**Activity 3.2.3:** Produce 1000 school manuals on climate risk management and training for teachers and other school personnel to support the integration of CC in the school curriculum and build a culture of CC resilience.

Public primary schools will be chosen as pilot test sites to disseminate information and best practices in climate risk management aimed at households. Selection of these schools is based on the fact that the teachers in rural settings often assert genuine intellectual leadership that they also transmit through students, especially those in the fourth and fifth grades who in turn serve as intermediary educators in their families. Climate change will be included in the school curriculum through development and diffusion by the project, in accordance with the Ministry of National Education, of: (i) 100 guides for inspectors; (ii) 200 teaching manuals for teachers; (iii) 700 school exercise books. Two schools located far from each other will be chosen in each commune, both to receive the training and to put it into practice in the school gardens and woods that already exist in some locations and which could serve as demonstration and extension sites.

**Activity 3.2.4:** Make project results visible during regional and international meetings and through written reports and technical and scientific publications.

The products produced and the impacts generated by the project activities will be disseminated during regular meetings of the project bodies, notably the PSC, but also during meetings held at the coordination structures at various national (COMNACC, GTP, etc.), regional (CRD, COMRECC, GTP local, etc.) and local (CLD) levels. Also, regional and international seminars will provide an opportunity for sharing lessons learned from the project with other countries in the sub-region and worldwide in the context of the country's contribution to CC management on a global scale.

The two experts in charge of monitoring and evaluation will have primary responsibility for this activity. They will receive support from a national consultant specialized in communications. They will be assisted in their activities by other actors involved in project implementation, namely: (i) commune advisors who will be able to disseminate project results among colleagues in areas not covered by the project; and (ii) staff from extension services responsible for disseminating technical innovations to local communities.

**A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:**

#	Description	Date Identified	Type	Impact & Probability (1-5)	Mitigation / Management response	Owner
1	Low commitment and capacity of governing/technical institutions at different levels notably local (commune) to develop practices and mainstream climate change adaptation	PIF	Organizational and operational	I=3 P=3	The project will build the capacity of relevant governing/technical entities, and communities at different levels to raise awareness about climate change, and the need to develop plans and practices to adapt to these changes.	Governmental entities, and partners at regional, and communal level

#	Description	Date Identified	Type	Impact & Probability (1-5)	Mitigation / Management response	Owner
2	Social and political conflicts (e.g. land management, gender ...etc.). This includes security related issues due to the ongoing conflict in parts of the Casamance.	PIF	Social, Political	I=3 P=3	The project will fully involve elected leaders of the communes, and different stakeholders at the local level. This will help prevent and manage conflicts of different types. The Board of the commune in charge of affairs within the commune will be used in the decision making related to project activities in their areas including issues such as land management, gender and youth involvement.	Local stakeholders, namely local leaders and communities.
3	Heavy administrative procedures slow down project implementation	June 2014	Organizational and operational	I=3 P=3	The project will use a formalized and systematized partnership approach thru the signing of written agreements that spell out clearly the roles and responsibilities with a description of actions to be taken by who, when, where, and with what means and approach. Wherever possible and appropriate partnership with most decentralized institutions (communes, CBOs, NGOs, local extension services) will be favored.	Governmental entities (MEDD...etc.)  UNDP
4	Limited financial and technical capacity of project stakeholders including local communities and their institutions, and extension services	June 2014	Financial, technical, and organizational	I=3 P=3	The project is designed to build needed capacities of project stakeholders for its successful implementation (see description of project activities for more information on the type of support that will be provided).	Project stakeholders at different levels (government, local communities, extension services)
5	Occurrence of extreme climate events far greater than ever experienced and anticipated.	PIF	Environmental	I=4 P=2	Extreme climate events can significantly impact project activities. The project will develop mitigations measures and strengthen communication on potential climate risks based on improved climate information (appropriate adaptation technologies, etc.)	DEFCCS, UNDP, project partners and stakeholders
6	Political reforms and changes in personnel at different levels.	June 2014	Political	I=4 P=3	The project is designed with an adaptive management approach to allow taking into account major political changes that may have negative impacts on its achievements. With regard to the change of personnel, the project will mitigate potential impacts by establishing formal partnerships with institutions and not individuals. In addition, capacity-building activities, such as training,	DEFCCS, UNDP, project partners and stakeholders



#	Description	Date Identified	Type	Impact & Probability (1-5)	Mitigation / Management response	Owner
					will target several individuals (instead of one) to ensure that in the event of personnel change there will be some remaining persons for continuous involvement project activities.	
7	Villagers do not see the benefit of new practices or social pressures hinder adoption of new practices	June 2014	Strategic	I=4 P=2	The project has been designed with a participative approach that involved wide consultations with all project stakeholders at different levels and on numerous occasions. This approach was selected, even though it is time consuming and expensive, to ensure a maximum buy in from project stakeholders. In addition, the project is designed to use a similar approach during its implementation to put project beneficiaries in the driving seat as much as possible.	DEFCCS, UNDP, project partners and stakeholders
8	Risks of potential exclusion of women from project activities.	June 2014	Social	I = 2 P =2	Gender mainstreaming, stakeholder engagement and participatory approaches to designing activities will aim to avoid adverse impacts on gender equality	DEFCCS, UNDP, project partners and stakeholders
9	Anticipated negative environmental impacts from activities associated with the restoration of mangrove ecosystem, establishment of windbreaks around individual market garden, and reforestation activities.	June 2014	Environmental	I = 2 P =3	Coordination and implementation of the Project's environmental and social safeguards will be carried out by the PCU, which will oversee Project compliance with standard best practice, mitigation measures and stakeholder engagement during Project implementation	DEFCCS, UNDP

#### A.7. Coordination with other relevant GEF financed initiatives

##### Coordination under stakeholder's platform established by the Senegalese government

The Ministry of Finance established the Projects and Programmes Support Unit under the Investment Direction as mechanisms for projects review and information exchanges. Currently, technical and financial partners of Senegal as the World Bank, the Spanish Cooperation, and the Luxembourg Cooperation and to some extent, the Belgian Technical Cooperation and the African Development Bank made use of this mechanism. The Ministry of Environment and Sustainable Development also established the National Climate changes Committee (COMNACC) as an exchanges platform for stakeholders intervening in climate changes. In 2011, a presidential decree was issued to strengthen the institutional character of COMNACC. It is now a body of coordination, consultation, training, information, management and monitoring of various activities identified as part of the implementation of the Convention and additional legal instruments. It now includes representatives from the presidency of the republic, the senate, national assembly, the Prime Minister, the Economic and Social Council, ministries, civil society, local politicians, academics, youth associations and women etc.

Coordination with national Initiatives

- GEF/IFAD: *Climate Change adaptation project in the areas of watershed management and water retention*

The project will increase the resilience of agriculture production system and value chains to climate changes. The project expect to: (i) build national capacity, awareness and knowledge on climate change and agriculture production; (ii) to promote water harvesting and watershed management; (iii) promote water conservation and efficient conservation. While the two projects are intervening in different sites, it is expected exchanges of experiences and adaptation practices in the framework of Ministry of Environment.

- Adaptation Fund project -*Adaptation to Coastal Erosion in Vulnerable Areas*

The two projects are targeting the impacts of sea level rise impacts in the Coastal zone. The AF project is supporting the implementation of actions to protect the coastal areas of Rufisque, Saly, and Joal against erosion, actions to fight the salinization of agricultural lands used to grow rice in Joal with the construction of anti-salt dikes; assisting local communities of the coastal area of Joal, especially women, in handling fish processing areas of the districts located along the littoral and to conduct awareness programme and training related to adaptation and its adverse effects; communicating on the adaptation, sensitize and train local people on climate change adaptation techniques in coastal areas and on good practices, to avoid an aggravation of the various situations encountered; and developing and implementing the appropriate regulations for the management of coastal areas. The project ended on June 2015. As the Ministry of environment is implementation partner of the AF project, GEF project will benefit experiences and tools developed to implement efficient adaptation measures in the coastal zone.

Regional Projects

World Bank -*Senegal River Basin Climate Change Resilient Development Project*

The GEF project will increase the sustainability of and the resilience of the Basin’s agriculture-dependent population in the face of climate change and improve environmental management practices in the SRB. In term of Institutional Strengthening, the project is seeking the inclusion of Guinea as a signatory to the SRB Water Charter; and (ii) the development and delivery of a capacity development and training program on climate change adaptation for OMVS National Cellules and pre-identified National Agencies. It will strengthen the regional and national data knowledge base for Basin management with an emphasis on developing and integrating climate variability and change. Finally the project will implement climate change adaptation measures and integrate water resource management practices in the SRB.

**B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:**

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

The success of project intervention requires the active involvement and participation of the different stakeholders. Key stakeholders for the project include (i) national institutions involved in environmental monitoring and climate information (e.g. ANA, ANACIM, DEFCCS, CSE, DEEC, DGPRE, etc.); (ii) Regional and Local authorities and technical staffs from Louga, Thiès, Ziguinchor, Kolda, Sédhiou and target villages leaders; (iii) community based organisations (women and young associations) that are living in the targeted rural areas, including the participation of potentially vulnerable groups such as women; (iv) and NGO supporting communities on their activities (e.g. OCEANIUM, Action pour la Paix). The present Plan was designed based on the series of meetings organised with stakeholders during the project inception, for agreeing on project content and operationalization (situation analysis, priority sites for intervention, priority criteria, management arrangements).

Outputs	Responsible institution and role	Stakeholders and role
Output 1.1: The climate,	ANACIM & DGPRE:	Local leaders, technical staffs,

meteorological and hydrological network for the target areas and the capacities are strengthened in order to produce reliable data needed to monitor and analyse hydro-climatic phenomena	identification of needs, procurement and installation of hydro-Meteo stations, and organise training of staffs on the use of material and tools	target communities organisation: contribution to the identification of climate /hydro information needs
<u>Output 1.2:</u> Develop an integrated information system producing climate information and generating the products needed to identify risks related to climate change (e.g., maps for risk, vulnerability, etc.)	ANACIM& CSE: development of the database	DGPRES, DEFCCS, MEED, etc.: contribution to establish socio-economic & environmental database;  Target communities: participation in analysing socio-economic and ecosystem sensitivity to CC & identifying adaptation options
<u>Output 1.3:</u> A platform for sharing information is established to support the management of climate risks and long-term planning for adaptation.	ANACIM: establishment of the sharing platform	CSE, DGPRES, DEEC, DEFCCS, COMNACC: contribution in identifying relevant existing sharing system/participation in the designing and operationalization of the sharing information platform;  Local government: mobilisation of communities  Communities: participation in the sharing information platform.
<u>Output 2.1:</u> At least 100 hectares of mangrove plantations are managed sustainably to restore this important ecosystem as a means of support (oyster farming, for example) and reduce the impact of swell and coastal erosion	ANA & DEFCCS: Advisory and supervision	NGO Oceanium and Enfance et Paix: conduct restoration activities;  Local government: mobilisation of communities  Target communities (women organizations): participation in restoration and IGA's activities;
<u>Output 2.2:</u> Multi-purpose community forests resilient to climate change tested in the vegetable gardens of Niayes to protect crops from wind erosion and prevent encroachment by sand dunes	ISRA: Conduct research on best-adapted forest species and suitable technologies for market gardens  DEFCCS: Advisory and supervision reforestation activities  Local Agriculture Services: Advisory and supervision on	Local government: mobilisation of communities  Target communities (farmers): participation in reforestation & micro-irrigation activities

	micro-irrigation activities	
<u>Output 2.3:</u> At least 10 community groups, particularly women's groups, will be supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies	DEFCCS: Advisory and supervision reforestation activities  Extension services: Advisory and supervision women IGA activities activities	Local government: mobilisation of communities  Microfinance services: supporting women in their IGA (establishment of saving system, credit lines, training on entrepreneurship);  Women organization: involved in identifying and undertaking IGA, and establishing plant nursery;  Farmers organization: involved in farming systems (beneficiaries)  Other communities: involved in reforestation activities and bushfire combat.
<u>Output 3.1:</u> Local governments and decentralized technical services have the necessary capacities to support communities in implementing adaptation activities	ANACIM & COMNACC: development of training packages	Staffs from municipalities, extension services & community organisations: identification of training needs, participation to training sessions
<u>Output 3.2:</u> The benefits from implemented adaptation solutions are monitored and shared with government officials, target communities and partners to inform them about project results replication opportunities.	Ministry of Environment: management of project communication component	Ministry of Education (regional inspections & schools in target sites): contribute to the development of school booklets on climate changes  Target communities: involved in projects communication (regional forums, exchanges visits, etc.)

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The project objective is to create an enabling environment for the implementation of adaptation solutions based on ecosystem management in the Niayes and Casamance regions with major consideration placed on maximizing the project's cost-efficiency ratio. This consideration will consist of leading activities on the geographic themes and areas where their added value is substantial, or even crucial. Thus, the proposed components, outputs, activities and approaches have been identified and selected so the project objectives and expected impacts can be achieved based on a cost-efficiency approach.

As indicated above, this project document meets the immediate and urgent adaptation priorities identified in the NAPA for Senegal. These priorities were measured based on their cost-efficiency and their sustainability, before the project components had been identified and developed. This project aims to achieve results that will be a first in the target areas

through three components commensurate with the project's resources. These components and their expected results reinforce each other. Hence, Component 1 will consist of providing climate information and relevant tools for managing climate risks to communal authorities, technical services and communities to promote practices for sustainable land use and ecosystems resilient to CC (Component 2) and to bring all this to scale through Component 3 on knowledge sharing and management.

Improving resilience to the impacts of climate change for the ecosystems of the Niayes and Casamance regions as well as communities from these regions who are among Senegal's and the world's most vulnerable is an undertaking with incalculable benefits, justifying by far the modest envisaged costs. With or without this project, local populations will have to develop more resilient options and economies for their survival. In effect, this is less about improving living conditions than safeguarding life, and even survival, which is priceless.

In the context of the project areas, developing socio-economic activities in alternative and more lucrative activities in the traditional sectors of agriculture, livestock breeding and forestry that are becoming increasingly unstable due in large part to CC. However, the vast majority (over 90%) of people in the project areas still depend on these types of activities and are facing food insecurity and various other manifestations of poverty that are becoming chronic for an increasingly substantial proportion of people. Increasing the resilience of agricultural and livestock practices is therefore crucial to improving the resilience of communities themselves. Promoting alternative economic activities with a view to increase people's incomes through IGAs would be a way to increase their resilience.

As indicated in the various studies conducted in the country, including the NAPA, and worldwide, Senegal as a whole (economic sectors, geographic areas taken together) and as an LCD is severely threatened by the impacts of CC. Thus, to strengthen resilience to the impacts of climate change, it is tempting to cover the entire country and therefore only scratch the surface. Instead, it was decided to only implement the project in two of the six eco-geographic areas of Senegal and on a limited number of communes, and by emphasizing the demonstration sites and sharing of successful experiences outside the sites and project areas. The idea is to reach a critical sample of people (by region and by type of production) who will adopt and extend community-based adaptation solutions that have been previously tested in demonstration projects.

Adapting to the impacts of climate change requires relevant climate information. This project will implement an effective system for climate data collection, analysis and extension to rural communities, technical services and local decision makers. It is expected that 3000 direct beneficiaries including producers, State actors, community radio announcers and NGOs are targeted to benefit capacity building on the use /maintenance of hydro meteorological instruments and on understanding climate forecasting. It is expected that the total population in project target sites (estimated to be 168,555 indirect beneficiaries) will access to relevant climate information through the information-sharing platform established and diffusion of information by community radios. A large part of the costs associated with this component will help finance meteorological equipment and strengthen ANACIM capacities and its existing network, all while ensuring a good cost-efficiency ratio for these investments. A possible, though not viable, alternative for the country could be to only use climate forecasts from the WMO or other international organizations. However, these organizations (i) can only work if the data are provided by a large number of countries worldwide, and (ii) generally do not provide forecasting on the local level and cannot do it without available data. Therefore, strengthening the climate data collection and processing system that the project will support will benefit all of Senegal, the sub-region and the rest of the world because these data can be entered into climate information systems on a national, regional and global levels. The type of expected results for Components 1 and 3 of the project is a prerequisite for: (i) conducting forecasting at the local, national and sub-regional levels; and (ii) sharing data with international organizations that in turn will help improve their climate forecasts and scenarios throughout the world.

Through the second component, this initiative will support the implementation of technologies and agro-sylvo-pastoral and IGA practices that will be resilient to climate threats that are becoming more frequent and intense. These local investments will be made through Component-2 activities. These activities have been identified through a literature

review and field visits during the project design stage through a participatory approach involving the various stakeholders (local communities and their locally-elected officials; decentralized government advisory services, CBOs and NGOs active in the project areas; and administrative and policy officials at the commune, departmental and regional levels.

Gender considerations were part of the process of project formulation. During the preparatory phase, efforts were made to involve women's groups and youth, as well as civil society and institutional leaders in the group discussions. Key issues were identified during the process, including the need for information on gender. Field missions were also organised at project target regions with consultants, meetings with regional, departmental and council's authorities and target communities to select key activities and target sites. Following community groups, including women association, are consulted during the PPG and the outcomes of discussions presented in PPG report 3.

Niayes

- o Market gardener groups of Potou (Louga);
- o Producers Associations Federation of Louga;
- o Producer groups of Lompoul

Casamance

- o Tobor Women Association
- o Diende Women Association
- o Women Association exploiting Bakoum valley
- o Sare village women association

Women's group and association will become partners in the implementation of climate resilient adaptation and awareness activities. As highlighted in section II.2, the project aims at implementing adaptation measures in a very participative fashion, through the inclusion of all social groups, also the marginalised, to guarantee maximum coverage of impact and structural consideration of the most vulnerable (and exposed to the impact of climate change) in planning adaptation interventions and early warning in the areas receiving beneficial effects. Thus there is provided in component 2 to implement adaptation initiatives, community-based small-scale activities with youth associations and women from target councils, focused on the development of alternative livelihoods resilient activities to climate change. At least 10 community groups, particularly women's groups, will be supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies. Under Component 3, at least 50 women's organizations will be capacitated to use climate information and adaptation technologies in their socio-economic activities. Women's group and association will become partners in the implementation of climate resilient adaptation and awareness activities. As highlighted in section II.2, the project aims at implementing adaptation measures in a very participative fashion, through the inclusion of all social groups, also the marginalised, to guarantee maximum coverage of impact and structural consideration of the most vulnerable (and exposed to the impact of climate change) in planning adaptation interventions and early warning in the areas receiving beneficial effects.

Proposed outputs are considered cost-effective relative to the alternative approaches considered to address project barriers, as shown in the Table in below

Outputs	Barriers addressed	Alternatives considered
<u>Output 1.1:</u> The climate, meteorological and hydrological network for the target areas and the capacities are strengthened in order to	<b>Barrier #2:</b> Weak institutional capacity for climate information	<b>Alternative 1:</b> If nothing is done, the current climate information targeting less than 5% of target communities will continue to work

Outputs	Barriers addressed	Alternatives considered
produce reliable data needed to monitor and analyse hydro-climatic phenomena	production and dissemination	<p>independently and little regional capacity will be built.</p> <p><b>Alternative 2:</b> Acquiring more equipment to improve regional and local coverage; this option was considered as per the feasibility studies, which demanded more monitoring equipment.</p> <p><b>Alternative 3:</b> Only use climate forecasts from the WMO or other international organizations. However, these organizations (i) can only work if the data are provided by a large number of countries worldwide, and (ii) generally do not provide forecasting on the local level and cannot do it without available data.</p>
<u>Output 1.2:</u> Develop an integrated information system producing climate information and generating the products needed to identify risks related to climate change (e.g., maps for risk, vulnerability, etc.)	<b>Barrier #2:</b> Weak institutional capacity for climate information production and dissemination	<b>Alternative 1:</b> Have separate data portals for each agency to ensure security: however, this would prohibit the easy use of data across agencies and a potential means to share data.
<u>Output 1.3:</u> A platform for sharing information is established to support the management of climate risks and long-term planning for adaptation.	<b>Barrier #2:</b> Weak institutional capacity for climate information production and dissemination	<b>Alternative 1:</b> Do nothing; if the locals are not informed on the utility of climate information and farmers will continue to plan agriculture season without climate information.
<u>Output 2.1:</u> At least 100 hectares of mangrove plantations are restored to reduce the impact of swell and coastal erosion	<b>Barrier #1:</b> Inadequate production systems challenged by climate change and variability	<p><b>Alternative 1:</b> If nothing is done, at least 150,000 ha of mangrove will be lost with ecological impacts (loss of biodiversity) and reduction of sources of revenues for women associations (oyster production estimated at 10,000t/year)<sup>6</sup>.</p> <p><b>Alternative 2:</b> Undertake reforestation activities. However, communities are not well capacitated to monitor of plantation. Therefore the project will engage DEFCCS to train communities on plantation maintenance.</p>
<u>Output 2.2:</u> Multi-purpose community forests resilient to climate change tested in the vegetable gardens of Niayes to protect crops from wind erosion and prevent encroachment by sand dunes	<b>Barrier #1:</b> Inadequate production systems challenged by climate change and variability	<p><b>Alternative 1:</b> Doing nothing: encroachment of vegetable garden with expected loss of production at least 200,000t of vegetable/year (loss of revenue/household/agriculture campaign=400USD).</p> <p><b>Alternative 2:</b> Ensure protection of vegetable</p>

<sup>6</sup> Cornier-Salem : 1986

Outputs	Barriers addressed	Alternatives considered
		garden through reforestation. The project will support forest activities in areas most vulnerable. However mitigation measures need to be undertaken ahead with the maintenance of filao forest to fix the sand dunes.
<p><u>Output 2.3:</u> At least 10 community groups, particularly women’s groups, will be supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies</p>	<p><b>Barrier #4:</b> Producers and households with low technical and financial capacities</p>	<p><b>Alternative 1:</b> Do nothing. At least 185,000 people (45% women) will continue to be vulnerable to face the impacts of climate variability with no safety net mechanisms for managing risks associated with climate variability impacts on foods resources and livelihoods. Therefore, the project will support the development of small-scale adaptation initiatives.</p> <p><b>Alternative 2:</b> Support the establishment of small-scale adaptation initiatives. However, the daily running and sustainability of these initiatives requires capacitance of recipient communities. Therefore, the project will promote partnership with technical services at local level to advice and monitor all activities.</p>
<p><u>Output 3.1:</u> Local governments and decentralized technical services have the necessary capacities to support communities in implementing adaptation activities</p>	<p><b>Barrier#3:</b> Insufficient capacities of local communities, technical services and decentralized administrations to develop and implement adaptation practices to climate change.</p>	<p><b>Alternative 1:</b> Business as usual. Local government and technical services will continue to support communities on traditional issues. However, they will not have access to relevant technical skills to support communities and climate disaster risks reduction. The project will provide relevant capacities to at least 200 staffs from the extension services of the ministries (of water resources, agriculture, environment, livestock, etc.) on climate risks and on using results from climate risk assessments and vulnerability to adjust regulations, policies and plans that govern land and ecosystem management.</p>
<p><u>Output 3.2:</u> The benefits from implemented adaptation solutions are monitored and shared with government officials, target communities and partners to inform them about project results replication opportunities.</p>	<p><b>Barrier#3:</b> Insufficient capacities of local communities, technical services and decentralized administrations to develop and implement adaptation practices to climate change</p>	<p><b>Alternative 1:</b> Do nothing, best practices and lessons learned from project are limited and insufficient, and knowledge sharing among vulnerable communities on how to address a changing climate is poor. The project will develop training and a public awareness campaign to inform critical mass of communities local populations about the potential of climate information to assist them in building resilience to climate/weather extremes</p>



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

The project objective is to create an enabling environment for the implementation of adaptation solutions based on ecosystem management in the Niayes and Casamance regions with major consideration placed on maximizing the project's cost-efficiency ratio. This consideration will consist of leading activities on the geographic themes and areas where their added value is substantial, or even crucial. Thus, the proposed components, outputs, activities and approaches have been identified and selected so the project objectives and expected impacts can be achieved based on a cost-efficiency approach.

As indicated above, this project document meets the immediate and urgent adaptation priorities identified in the NAPA for Senegal. These priorities were measured based on their cost-efficiency and their sustainability, before the project components had been identified and developed. This project aims to achieve results that will be a first in the target areas through three components commensurate with the project's resources. These components and their expected results reinforce each other. Hence, Component 1 will consist of providing climate information and relevant tools for managing climate risks to communal authorities, technical services and communities to promote practices for sustainable land use and ecosystems resilient to CC (Component 2) and to bring all this to scale through Component 3 on knowledge sharing and management.

Improving resilience to the impacts of climate change for the ecosystems of the Niayes and Casamance regions as well as communities from these regions who are among Senegal's and the world's most vulnerable is an undertaking with incalculable benefits, justifying by far the modest envisaged costs. With or without this project, local populations will have to develop more resilient options and economies for their survival. In effect, this is less about improving living conditions than safeguarding life, and even survival, which is priceless.

In the context of the project areas, developing socio-economic activities in alternative and more lucrative activities in the traditional sectors of agriculture, livestock breeding and forestry that are becoming increasingly unstable due in large part to CC. However, the vast majority (over 90%) of people in the project areas still depend on these types of activities and are facing food insecurity and various other manifestations of poverty that are becoming chronic for an increasingly substantial proportion of people. Increasing the resilience of agricultural and livestock practices is therefore crucial to improving the resilience of communities themselves. Promoting alternative economic activities with a view to increase people's incomes through IGAs would be a way to increase their resilience.

As indicated in the various studies conducted in the country, including the NAPA, and worldwide, Senegal as a whole (economic sectors, geographic areas taken together) and as an LCD is severely threatened by the impacts of CC. Thus, to strengthen resilience to the impacts of climate change, it is tempting to cover the entire country and therefore only scratch the surface. Instead, it was decided to only implement the project in two of the six eco-geographic areas of Senegal and on a limited number of communes, and by emphasizing the demonstration sites and sharing of successful experiences outside the sites and project areas. The idea is to reach a critical sample of people (by region and by type of production) who will adopt and extend community-based adaptation solutions that have been previously tested in demonstration projects.

Adapting to the impacts of climate change requires relevant climate information. This project will implement an effective system for climate data collection, analysis and extension to rural communities, technical services and local decision makers. It is expected that 3000 direct beneficiaries including producers, State actors, community radio announcers and NGOs are targeted to benefit capacity building on the use /maintenance of hydro meteorological instruments and on understanding climate forecasting. It is expected that the total population in project target sites (estimated to be 168,555 indirect beneficiaries) will access to relevant climate information through the information-sharing platform established and diffusion of information by community radios. A large part of the costs associated with this component will help finance meteorological equipment and strengthen ANACIM

capacities and its existing network, all while ensuring a good cost-efficiency ratio for these investments. A possible, though not viable, alternative for the country could be to only use climate forecasts from the WMO or other international organizations. However, these organizations (i) can only work if the data are provided by a large number of countries worldwide, and (ii) generally do not provide forecasting on the local level and cannot do it without available data. Therefore, strengthening the climate data collection and processing system that the project will support will benefit all of Senegal, the sub-region and the rest of the world because these data can be entered into climate information systems on a national, regional and global levels. The type of expected results for Components 1 and 3 of the project is a prerequisite for: (i) conducting forecasting at the local, national and sub-regional levels; and (ii) sharing data with international organizations that in turn will help improve their climate forecasts and scenarios throughout the world.

Through the second component, this initiative will support the implementation of technologies and agro-sylvo-pastoral and IGA practices that will be resilient to climate threats that are becoming more frequent and intense. These local investments will be made through Component-2 activities. These activities have been identified through a literature review and field visits during the project design stage through a participatory approach involving the various stakeholders (local communities and their locally-elected officials; decentralized government advisory services, CBOs and NGOs active in the project areas; and administrative and policy officials at the commune, departmental and regional levels.

### **C. DESCRIBE THE BUDGETED M & E PLAN:**

The project will be monitored through the following M& E activities. The M& E budget is provided in the table below.

#### **Project start:**

A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. The Inception Workshop should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles; support services and complementary responsibilities of UNDP CO and RCU staff vis à vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the relevant SOF (e.g. GEF) Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.

- Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

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

#### **Quarterly:**

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

#### **Annually:**

- Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and SOF (e.g. GEF) reporting requirements.
  - The APR/PIR includes, but is not limited to, reporting on the following:
    - Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
    - Project outputs delivered per project outcome (annual).
    - Lesson learned/good practice.
    - AWP and other expenditure reports
    - Risk and adaptive management
    - ATLAS QPR
    - Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.
    - Describe M&E framework for specific outputs that are based on RCT principles, including who is to be involved, budget, survey instrument etc.

#### **Periodic Monitoring through site visits:**

UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

#### **Mid-term of project cycle:**

The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (insert date). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-EEG. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant SOF (GEF) Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

### **End of Project:**

An independent Final Terminal Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and SOF (e.g. GEF) guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF M&E.

The Final Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response that should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant SOF (e.g. GEF) Focal Area Tracking Tools will also be completed during the final evaluation.

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

### **Learning and knowledge sharing:**

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

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned. The project will identify, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

### **Communications and visibility requirements:**

Full compliance is required with UNDP's Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects need to be used. For the avoidance

of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The [GEF logo](http://www.thegef.org/gef/GEF_logo) can be accessed at: [http://www.thegef.org/gef/GEF\\_logo](http://www.thegef.org/gef/GEF_logo). The [UNDP logo](http://intra.undp.org/coa/branding.shtml) can be accessed at <http://intra.undp.org/coa/branding.shtml>.

Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: [http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08\\_Branding\\_the\\_GEF%20final\\_0.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf). Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

Table: M& E work plan and budget

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	Project Manager UNDP CO, UNDP W&O RTA	Indicative cost: 10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	UNDP W&O RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	50,000	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on <i>output and implementation</i>	Oversight by Project Manager Project team	100,000	Annually prior to ARR/PIR and to the definition of annual work plans
APR/PIR	Project manager and team UNDP CO UNDP RTA UNDP GEF M&E	None	Annually
Periodic status/ progress reports	Project manager and team	None	Quarterly
Mid-term Evaluation	Project manager and team UNDP CO UNDP RCU External Consultants (i.e. evaluation team)	Indicative cost: 40,000	At the mid-point of project implementation.
Final Evaluation	Project manager and team, UNDP CO UNDP RCU External Consultants (i.e. evaluation team)	Indicative cost : 40,000	At least three months before the end of project implementation
Project Terminal Report	Project manager and team UNDP CO Local consultant	0	At least three months before the end of the project
Audit	UNDP CO Project manager and team	Indicative cost per year: 3,000	Yearly
Visits to field sites	UNDP CO	For GEF supported	Yearly

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
	UNDP RCU (as appropriate) Government representatives	projects, paid from IA fees and operational budget	
<b>TOTAL indicative COST</b> Excluding project team staff time and UNDP staff and travel expenses		US\$ 255,000 (+/- 5% of total budget)	


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

- A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):**  
 (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this form. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mrs. Mariline DIARA	Director, Department of Environment and Classified Establishments (DEEC)	MINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT	01/14/2013

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

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Adriana Dinu, Executive Coordinator, UNDP/GEF		06/04/2015	Ms. Mame Dagou DIOP	+221 77 635 9185	<a href="mailto:mame.diop@undp.org">mame.diop@undp.org</a>

**ANNEX A: PROJECT RESULTS FRAMEWORK** (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

**The project will contribute to reaching the Country Program Results as defined in the UNDP and UNDAF Country Program:**

**UNDAF 2012-2016 Outcome(s):**

Outcome 1: "By 2016, farmers in targeted areas increase their income by using new knowledge, technologies, and investments with high added value."

Outcome 7: "By 2016, efforts to adapt to climate change facilitate adequate access of people affected to basic social services and the development of sustainable livelihoods."

**Expected outputs of the Country Programme Action Plan (CPAP) 2014-2018:**

Output 1: "Resilient climate change policies formulated and access to financial mechanisms enhanced "

Output 2: "Pilot sites developed and resilient to climate change

**UNDP Strategic Plan 2014-2017 Outputs**

Output 1.4. Scale up action on climate change adaptation and mitigation across sectors which is funded and implemented

**Pertinent GEF Strategic Objectives:**

Objective 1: Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change

Objective 2: Strengthen institutional and technical capacities for effective climate change adaptation

**Pertinent GEF Expected Outcomes:**

Outcome 1.1: Vulnerability of physical assets and natural systems reduced

Outcome 1.2: Livelihoods and sources of income of vulnerable populations diversified

Outcome 1.3: Climate-resilient technologies and practices adopted and scaled up

Outcome 2.1: Increased awareness of climate change impacts, vulnerability and adaptation

Outcome 2.3: Access to improved climate information and early-warning systems enhanced at regional, national, sub-national and local levels

Outcome 2.4: Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures

**Relevant GEF Outcome Indicators (Following the AMAT tool):**

Indicator 2: Type and extent (and value, where applicable) of assets strengthened and/or better managed to withstand the effects of climate change (measured e.g. in ha of cropland/ rangeland/ catchments; km of coastline)

Indicator 3: Number of people benefiting from the adoption of diversified, climate-resilient livelihood options (percentage of whom are female)

Indicator 4: Extent of adoption of climate-resilient technology/ practice (measured in number of users [percentage of whom are female]; or geographical area)



**Indicator 5:** Number of people (percentage of whom are female) with increased awareness of climate change impacts, vulnerability and adaptation

**Indicator 7:** Number of people (percentage of whom are female)/ geographical area with access to improved climate information services

**Indicator 9:** (a) Number of people (percentage of whom are female) trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures

Objectives/Outcomes	Indicator	Baseline	Target for End of Project	Means of Verification	Risks and Hypotheses
Project Objective	<p><b>Indicator 1</b> Number of people affected by the impacts of climate changes that adopted climate resilient technologies/practices (disaggregated by gender) (AMAT indicator 4)</p>	<p>The production in eco-geographical areas of Niayes and Casamance are seriously threatened by the impacts of climate change, include: water shortage, land degradation, salinization, siltation of valleys linked to soil erosion in highlands, and degradation of habitats among the most productive and sensitive such as mangroves and coastal areas. It is estimated that 168,555 people in target sites are affected.</p> <p>Significant efforts have been made to address environmental issues and natural resources management with the implementation of various international agreements including the Rio Conventions. However, due to the population's low income levels and limited access to climate resilient technologies, farmers and households have limited capacity to adapt to climate change: this include new technologies to make agro-sylvo-pastoral activities more resilient; and diversification of activities for better risk management.</p>	<p>At least 3500 people from Dakar, Louga, Thiès, Ziguinchor, Sédhiou and Kolda (50% women) covered by risks management measures such as resilient ecosystem and land management practices (e.g. mangrove/forest restoration); resilient agro-pastoral and agro-forestry activities and sustainable water management</p>	<p>Survey and M&amp;E Reports 18.</p>	<p><u>Assumption</u></p> <ul style="list-style-type: none"> <li>➤ Existence of scientific and technical capacities to support the development of risks management measures;</li> <li>➤ Participation and commitment of target communities</li> </ul> <p><u>Risks</u></p> <ul style="list-style-type: none"> <li>➤ Political instability and conflict resurgence in Casamance;</li> <li>➤ Existence of unresolved land disputes</li> <li>➤ Low capacity and involvement of national institutions to support communities in their adaptation activities</li> <li>➤ Impacts of climate change far greater than predicted</li> </ul>

<p><b>Outcome 1:</b> Information management systems to determine and monitor the impacts of climate change on ecosystems are implemented for effective forecasting, preparation and decision-making</p>	<p><b>Indicator 2:</b> Number of people (50% female) in Niayes and Casamance regions with access to improved climate information (AMAT indicator 7)</p>	<p>With limited coverage on meteorological network, communities have limited access to climate information. Moreover, the non-translation of existing climate information into formats that are easily understood by technical extension services (agriculture, forests, livestock, etc.), ecosystems managers and producers, makes it of limited use.</p>	<p>At least 3000 people (50%) women will access to relevant climate information through the sharing platform established to provide ongoing monitoring of the meteorological/climate, hydrological and agricultural situation and to warn communities in time.</p>	<p>Activity and M&amp;E Reports Survey 31.</p>	<p><u>Assumption</u></p> <ul style="list-style-type: none"> <li>➤ Availability of relevant information to support information &amp; awareness process</li> </ul> <p><u>Risks</u></p> <ul style="list-style-type: none"> <li>➤ Low mobilisation and lack of interest of target groups</li> </ul>
<p><b>Outcome 2:</b> Adaptation options based on ecosystem management in the two target areas (Niayes and Casamance), including the adoption of ecosystem and land management practices resilient to climate change, reduce the risks caused by climate change in these areas.</p>	<p><b>Indicator 3:</b> Ha of natural system better managed to withstand the effects of climate change (AMAT indicator 2)</p>	<p>At present, natural resource management is advanced largely through the improvement of productivity, capacity building of producers or ecosystem management/land &amp; forest restoration. What is lacking, under conditions of climate change, is climate adaptive interventions to address climate-driven factors such as securing mangrove from the impacts of storm surges, coastal erosion; protecting Niayes from wind erosion and the advancing of dunes, etc. This, in turn, will help local communities and producers to ensure continued availability and access to natural resources that support livelihoods and reduce their vulnerability to shocks and ultimately to adapt to changing conditions.</p>	<ul style="list-style-type: none"> <li>➤ 100 ha of mangrove restored to reduce the impacts of storm surges, and coastal erosion;</li> <li>➤ 110 ha of windbreaks planted in the Niayes vegetable gardens to protect production from wind erosion and prevent the encroachment of sand dunes;</li> <li>➤ 100 ha reforestation in the Soukou valley to protect the watershed from erosion</li> </ul>	<p>Activity and M&amp;E Reports Survey</p>	<p><u>Assumptions</u></p> <ul style="list-style-type: none"> <li>➤ Involvement of communities</li> </ul> <p><u>Risks</u></p> <ul style="list-style-type: none"> <li>➤ Low capacity and involvement of national institutions to support communities in their adaptation activities</li> </ul>

	<p><b>Indicator 4:</b> Number of people benefiting from the adoption of diversified, climate-resilient livelihood options (percentage of whom are female) (AMAT indicator 3)</p>	<p>Due to the population's low income levels and limited access to credit, farmers and households do not have the financial resources to make required investments to adapt to climate change. This situation is particularly difficult for women facing to multiple socio-economic problems, including: (i) unfair access to production resources including land, training, funding, etc.; and (ii) an unfavorable distribution of roles and responsibilities between men and women in the production and social life.</p>	<p>At least 30 community groups (1500 people approx. among them 80% women) supported in Casamance to undertake agro-pastoral, agro-forestry activities and sustainable water management practices in rice paddies</p>	<p>Activity and M&amp;E Reports Survey</p>	
<p><b>Outcome 3:</b> Individual, household and community capacities will be strengthened in order to increase awareness about responses to climate change and effective support for adaptation efforts.</p>	<p><b>Indicator 5</b> Type and number of people with increased awareness of climate change impacts, vulnerabilities and adaptation (gender disaggregated) (AMAT indicator 5)</p>	<p>Even with the existing sources of weather data, the national meteorological Agency has insufficient information to effectively predict the impacts of weather patterns leading to low capacity of managers and households to effectively management natural resources and biodiversity in ignorance of fundamental climate-ecosystem dynamics. Adaptation solutions need to be framed by a basic understanding of how climate interacts with ecosystems and species – the Eco physiological, evolutionary, and ecological processes and responses that determine ecological system productivity and resilience; along with the</p>	<p>At least 200 staffs from local technical services, 1000 people from CBO's, among them 50% women, and 100 teachers have relevant knowledge on climate risks to better response to climate changes and to provide effective support for adaptation efforts.</p>	<p>Activity and M&amp;E Reports Survey</p>	<p><u>Assumption</u> Availability of relevant physical and socio-economic data allowing the assessment of key vulnerability and cost effectiveness adaptation options</p> <p><u>Risks</u> Low capacity and involvement of national institutions to support development of knowledge products</p>

		productivity and resilience of the dependent social systems.			
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**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Response to Germany

Comments	Response
<p>Germany suggests considering more strongly connectivity and transferability of the project results to other regions and/ or to the national level establishing the foundation for up-scaling in the medium-/long-term.</p> <p>Potential for up-scaling also exists for climate resilient land and ecosystem management practices implemented under component 2 as mentioned in component 3. Germany suggests addressing up-scaling of best practices more systematically in the final project proposal</p>	<p>Activities for Component 3, designed especially for the scaling-up of project experiences, will be used to ensure sustainability and replicability of project activities and results. Therefore, through the various communication and dissemination methods to share project experiences, including visits between the different communities for sharing, planned in Component 3, it is envisaged that the promoted adaptation solutions will be replicated in other communities. This component will help the project results to influence local and regional policies, strategies, plans and programs in the target areas, especially ensuring intervention sustainability and replicability.</p>
<p>For instance, regarding the establishment of an integrated region-specific information system (component 1) it should be considered to facilitate inter-regional data and knowledge sharing. Further, the suggested platform should be designed in a way that it allows for an integration of further data from other regions for establishing a national information platform in the long-term. Such an approach would contribute to the sustainability of the project.</p>	<p>Regarding the information system, a national monitoring framework is developed by MEDD with operational environmental and socioeconomic indicators to quantitatively assess the state of the environment and pressure on natural resources. Under component 1, a study aimed at conducting an inventory of the various existing platforms on climate information in the various target regions across the country and at the sub-regional level will be conducted. This will involve identifying them; describing how they function and the roles of the various stakeholders; assessing their strengths and weaknesses, indicators of their sustainability; and the means for collaboration and sharing information that can be implemented.</p>

Responses to US

Comments	Response
<p>How the various project components are linked, especially Components 1 and 2. For example, how will the information collected from the weather, climate and hydrological observation network in Component 1 inform the design of activities in Component 2, such as the planting of mangroves and windbreaks? Building in linkages between project components from the beginning will ensure that the various lessons learned and best practices from each Component's activities will inform implementation across all project areas;</p>	<p>The research-development activities undertaken under Component 2 will adapt the technical agricultural package for horticulture and agro-forestry production systems to a changing biophysical context based on agro-meteorological and climate forecasts developed under Component 1.</p>
<p>What observations/data will be collected, and how UNDP will help ensure that observations/data are used correctly and feed into product, decision-support and hydro-met systems accurately</p>	<p>The project will rehabilitate and/or strengthen the network for meteorological and hydrological observations in the five-targeted administrative regions to better monitor changes in the climate and hydrology of the various waterways. Specifically, five</p>

Comments	Response
	<p>automated meteorological stations (automatic collection and transmission via GPRS) will be installed in the regions of Louga, Thiès, Ziguinchor, Sédhiou and Kolda to collect data on temperature, rainfall, sunshine, wind, humidity, evaporation, etc. In addition, in each of these regions, the network of rainfall stations will be made denser. Therefore, 40 rainfall stations will be set up in each region. In an effort to monitor the impact of the swell on the mangrove, a marine station will be installed in Tobor for measuring wave height (swell) and conventional parameters.</p> <p>The implementation of the hydro-climatic information platform will first require conducting a diagnosis of the system to collect meteorological and hydrological data, and then, to assess the needs in climate information for targeted populations in the context of this project (local population, technical services, locally-elected officials, local administration, etc.).</p>
<p>Provide more information on how the climate and hydrological observation network could contribute to the Global Climate Observing System (GCOS) and the Global Framework of Climate Services (GFCS);</p>	<p>Linkages will be created with other existing information systems on food security and the environment. At the sub-regional level, the existing platforms working with GCOS and GFCS will be leveraged (AGHRMET, ACMAD, RPCA, etc.).</p>
<p>Provide more information on how beneficiaries, including women and indigenous groups, have been involved in the development of the project proposal.</p>	<p>This project is elaborated through a participative process. Key stakeholders and a selection of direct beneficiaries have been involved in priority settings and project design. The Directorate of Water, Forests, Hunting and Soil Conservation has led project formulation. Various stakeholders participated to the PPG inception meeting such as staffs from Ministry of Environment (including all ministerial department and their representatives in project target regions), Ministry of Finances, ANACIM, and research institutes, NGO, Consultants and UNDP. It was organised series of meetings at national and local level (with regional, departmental authorities and representatives from communities and consultants, NGOs and other stakeholders) to analyse the situation and agree on the content and the operationally of the project.</p> <p>Field missions were also organised at project target regions with consultants, meetings with regional, departmental and council's authorities and target communities to select key activities and target sites. Following community groups, including women association, are consulted during the PPG and the outcomes of discussions presented in PPG report 3.</p> <p><u>Niayes</u></p> <ul style="list-style-type: none"> <li>- Market gardener groups of Potou (Louga);</li> <li>- Producers Associations Federation of Louga;</li> <li>- Producer groups of Lompoul</li> </ul> <p><u>Casamance</u></p> <ul style="list-style-type: none"> <li>- Tobor Women Association</li> <li>- Diende Women Association</li> <li>- Women Association exploiting Bakoum valley</li> <li>- Sare village women association</li> </ul>

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>7</sup>**

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

<b>PPG Grant Approved at PIF: 150,000</b>			
<b><i>Project Preparation Activities Implemented</i></b>	<b><i>GEF/LDCF/SCCF Amount (\$)</i></b>		
	<b><i>Budgeted Amount</i></b>	<b><i>Amount Spent To date</i></b>	<b><i>Amount Committed</i></b>
Component 1: Needs assessment and technical feasibility of adaptation options and measures	60,100	37,613	22,487
Component 2: Project development	20,000	13,169	6,831
Component 3: Consultation with key stakeholders	49,900	24,711	25,189
Component 4: Development of financial plan and co-funding scheme	20,000	0	20,000
<b>Total</b>	<b><u>150,000</u></b>	<b>75,493</b>	<b>74,507</b>

<sup>7</sup> If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)





**United Nations Development Programme**

**Country: Republic of Senegal  
PROJECT DOCUMENT**

**Project Title:** Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions- Republic of Senegal (PRGTE)

**UNDP Strategic Plan 2014-2017 Outputs**

Output 1.4. Scale up action on climate change adaptation and mitigation across sectors which is funded and implemented

**UNDAF 2012-2016 Outcome(s):**

Outcome 1: "By 2016, farmers in targeted areas increase their income by using new knowledge, technologies, and investments with high added value."

Outcome 7: "By 2016, efforts to adapt to climate change, facilitate adequate access to basic social services for affected people and the development of sustainable livelihoods."

**Expected Outcomes of UNDP 2012-2016 Country Program:**

Program Area 3: Support to Climate Change Adaptation for Sustainable Development

**Expected outputs of the Country Programme Action Plan (CPAP) 2014-2018:**

Output 1: "Resilient climate change policies formulated and access to financial mechanisms enhanced"

Output 2: "Pilot sites developed and made resilient to climate change"

**Responsible Party:** Directorate of Water, Forests, Hunting and Soil Conservation

Programme Period:	2015-2020
Atlas Award ID:	00087092
Project ID:	00094237
PIMS:	4964
Start Date:	June 2015
End Date:	June 2020
Management Arrangements	NIM
PAC Meeting Date	April 2015

Total resources required:	<b>\$ 18,100,000.00</b>
Total resources allocated:	
• GEF/LDCF	<b>\$ 4,100,000.00</b>
• Others:	
Government (Grant)	\$ 7,800,000.00
Government (In Kind)	\$ 200,000.00
ANACM	\$ 3,500,000.00
UNDP (Grant)	\$ 2,500,000.00

### Executive Summary

According to Senegal's NAPA, the country is experiencing repeated droughts that have severely changed the water regime and vegetation cover. In addition, periodic flooding is also experienced. Targeted project areas (Niayes and Casamance) are marked by climate change and variability that can be summarized as: reduced rainfall (200-400 mm from north to south); high rainfall variability within and between years; increased rainfall pauses; shortening of the rainy season (the country has one rainy season with an average duration of 3 months); and an increase in temperature.

The impacts of climate change combined with human activities in the project areas, as in the rest of the country, result in a dramatic degradation of ecosystems that are the only means of survival for poor people in rural areas, which account for the vast majority. There are serious threats to productions in eco-geographical areas of Niayes and Casamance due to the impacts of climate change which include: water shortage, land degradation, salinization, siltation of valleys linked to soil erosion in highlands, and degradation of habitats among the most productive and sensitive such as mangroves and coastal areas. In conclusion, almost all social, economic, and environmental aspects in the two project areas are already seriously affected negatively by observed climate change impacts. It is also clear that these impacts will worsen in the short term and perhaps medium to long term as well, unless appropriate solutions are implemented.

The desired alternative situation would be to promote the adoption by local communities of systems and practices that are resilient to climate change and variability. The implementation of this alternative will require the removal of several barriers including: inadequate production systems to cope with climate variability and change; weak institutional capacities for the production and use of climate information; insufficient capacity of local communities, technical services and local governing bodies to develop and implement climate change adaptation practices; and, limited technical and financial capacities of producers and households.

This project, classified as a priority in Senegal's NAPA, is designed to contribute to the desired solution through its main objective to strengthen the enabling environment for the implementation of appropriate adaptation measures based on ecosystem management in Niayes and Casamance through three outcomes: (i) Effective forecasting, preparedness, and decision making information management systems for determining and tracking climate impacts on ecosystems are established; (ii) Ecosystem based adaptation options including the adoption of climate resilient land and ecosystem management practices in two target areas (Niayes and Casamance) reduce exposure to climate induced risks; and (iii) Community, household, and individual capacities will be strengthened for greater advocacy towards climate change responses and effective support to adaptation efforts.

Agreed by (Government):

\_\_\_\_\_  
Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

\_\_\_\_\_  
Date/Month/Year

Agreed by (UNDP):

\_\_\_\_\_  
Date/Month/Year

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## **ACRONYMS AND ABBREVIATIONS**

**AAP** Africa Adaptation Programme  
**ACMAD** African Centre of Meteorological Application for Development  
**AGHYMET** Agriculture, Hydrology, and Meteorology Research Center  
**ALM** Adaptation Learning Mechanism  
**ALP** Adaptation Learning Programme  
**AMAT** Adaptation Monitoring and Assessment Tool  
**ANA** National Aquaculture Agency  
**ANACIM** National Agency of Civil Aviation and Meteorology  
**ANAT** National Agency for Territorial Development  
**ANCAR** Agricultural and Rural Extension  
**ANEV** National Eco-villages Agency  
**ANSD** National Statistics and Demography Agency  
**CILSS** Permanent Inter-State Committee for Drought Control in the Sahel  
**COMNACC** National Committee on Climate Change  
**COMRECC** Regional Committee on Climate Change  
**CSE** Ecological Monitoring Center  
**DEEC** Directorate of Environment and Classified Establishments  
**DEFCCS** Directorate of Water, Forests, Hunting and Soil Conservation  
**DGPRES** General Directorate for Water Resources Management  
**DRDR** Regional Directorate for Rural Development  
**DREEC** Regional Division of Environment and Classified Establishments  
**EWS** Early Warning System  
**GEF** Global Environment Facility  
**GIS** Geographic Information System  
**GPF** Women's Advancement Groups  
**IGA** Income Generating Activity  
**IREF** Regional Inspectorate for Water and Forest  
**LDCF** Least Developed Countries Fund  
**MDG** Millennium Development Goal  
**MEDD** Ministry of Environment and Sustainable Development  
**NAPA** National Adaptation Programme of Action  
**NGO** Non-Governmental Organization  
**PADEC** Economic Development of Casamance Program  
**PADEN** Economic Development and Management Program of Niayes  
**PERACOD** Programme to promote rural electrification and a sustainable supply of domestic fuel  
**PRGTE** Project to Strengthen Land and Ecosystem Management in Niayes and Casamance  
**SNC** Second National Communication  
**TACC** Territorial Approach for Climate Change  
**UGF** Union of Foresters Groups  
**UNCCD** United Nations Convention to Combat Desertification  
**UNDP** United Nations Development Programme  
**UNFCCC** United Nations Framework Convention on Climate Change

## I. SITUATION ANALYSIS

### I.1 Intervention areas

The project “Strengthening land and ecosystem management under conditions of climate change in the Niayes and Casamance regions” (PRGTE) will be implemented in two geographic areas: Niayes and Casamance.

The Niayes eco-geographic area is located along the northern coast from Dakar to Saint Louis. With a total area of 2754 km<sup>2</sup>, it covers the administrative regions of Dakar, Louga and Thiès. The project will be implemented in the rural councils of Léona and Kab Gaye (Louga), in the Mboro commune (Thiès) and, by extension, in its area of influence (Darou Khoudoss and Taïba Ndiaye). A short rainy season and an overall rainfall of 200 mm/year characterize Léona and Kab Gaye. By contrast, Mboro, located in the south, reports an overall rainfall of 300 mm/year.

- The rural council of Léona covers approximately 415 km<sup>2</sup> with 30,335 population and numbers 106 villages. The socio-economic activities are market gardening, agro-forestry, logging, livestock raising, fishing and trade. It is an outstanding onion production area but marked by lack of rain.
- The rural council of Kab Gaye covers 302.55 km<sup>2</sup> with 12,235 population and numbers 54 villages. The main activities are market gardening, rain-fed crops, livestock raising and small trade. The majority of the land (55.2%) is cultivated in rain-fed crops, market gardening in the basins (1.5%) and a minute portion occupied by residents (0.3%). The remaining land is divided between savannah shrub lands, forest plantations, grassy savanna and grassy steppe.

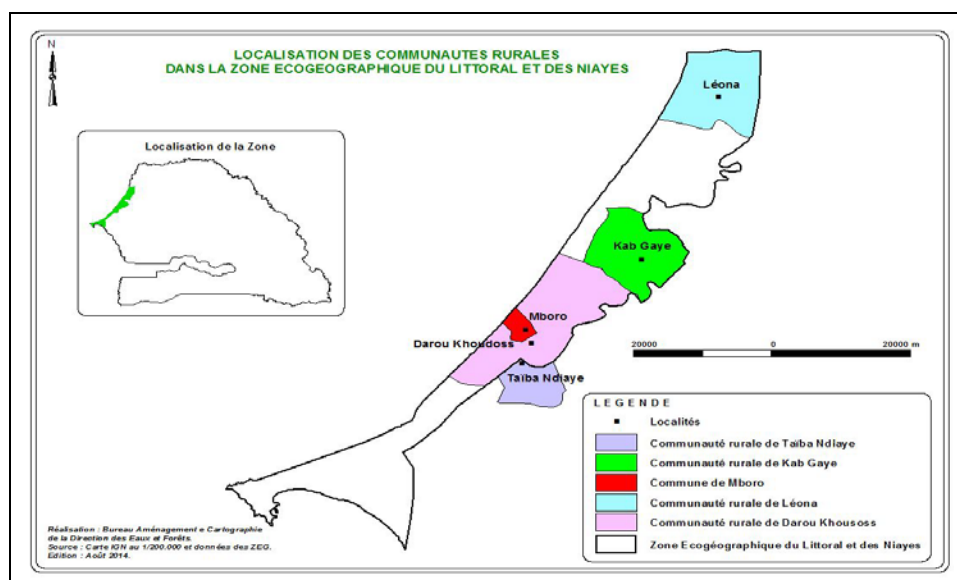


FIG 1: Target sites in Niayes ecoregion

- The Mboro commune covers 3.1 km<sup>2</sup> with 25,982 populations. It is an important industrial and commercial hub. Agricultural and fishery products play a key role for Mboro, which through its area of influence (Darou Khoudoss, Méouane and Taïba Ndiaye) is a large market gardening area. It provides 30% of the domestic production of potatoes and onions. Promoters come from Mauritania, The Gambia and Guinea Bissau for their supply. Women are the fastest growing marginalized group and are investing in all sectors of activities. The area of influence of Mboro encompasses the rural council of Darou Khoudoss (520 km<sup>2</sup>; 64,576 population), the rural council of Taïba Ndiaye (140 km<sup>2</sup>; 27,994) and the rural council of Méouane (334.3 km<sup>2</sup>; 38,170 population).

The eco-geographic area of Casamance corresponds to the natural region of the Casamance and combines the administrative regions of Ziguinchor, Sédhiou and Kolda, covering a total area of 28,350 km<sup>2</sup>.

- For the Ziguinchor region, activities will target the Tobor land (Niamone CR) and in the Kalounayes forest focusing on four rural councils (Niamone, Coubalan, Ouonck and Ténghory). In Kolda, the sites are the Soukou valley (Saré Bidji CR) and Saré Oumar (Dioulacolon CR). In Sédhiou the valleys of Madina Findifé and Diendé (Diendé CR) are targeted. Mangrove restoration will be carried out in Tobor and Diendé in addition to micro-projects in oyster and fish farming, which will be launched to help women. Rice production will be supported in the valleys of Madina Findifé and Diendé in Sédhiou and the Soukou and Saré Oumar valleys in Kolda. Pilot operations to restore palm groves will be conducted in the Madina Findifé and Soukou valleys. Efforts to combat water erosion will be carried out in the Soukou valley.
- The Tobor land falls within the Niamone rural council, and the project will support the Tobor village development committee's activities to strengthen capacities to involve women in mangrove management (oyster farming and mangrove restoration through reforestation).
- The Kalounayes area lies in the Ténghory arrondissement, which covers 1073 km<sup>2</sup> and numbers 81 villages with a population of 48,235. The Ténghory arrondissement has four rural councils (Coubalan: 11,002 population; Niamone: 7,643 population; Ouonck: 10,385 population; and Ténghory: 19,205 population). The main socio-economic activities of Kalounayes interfering with forest resources management are agriculture, livestock raising, logging, fishing, trade, handicrafts, tourism and industries drawing their raw materials from the forest. The Kalounayes forest encompasses 33 villages.
- The Diendé rural council covers a total area of 164 km<sup>2</sup> with an estimated population of 20,655. The plateaus, made up of leached ferruginous and ferallitic tropical soils, are adapted to rain-fed crops (grains, groundnut and cotton). The hydromorphic soils suitable for rice production, arboriculture and market gardening are found in the basins and lowlands. The fairly good rainfall with peaks over 1300 mm is, however, quite irregular. Agriculture is the main source of income for over 80% of the workforce. Livestock raising, fishing, logging, trade, handicrafts and micro-industries are also conducted here.

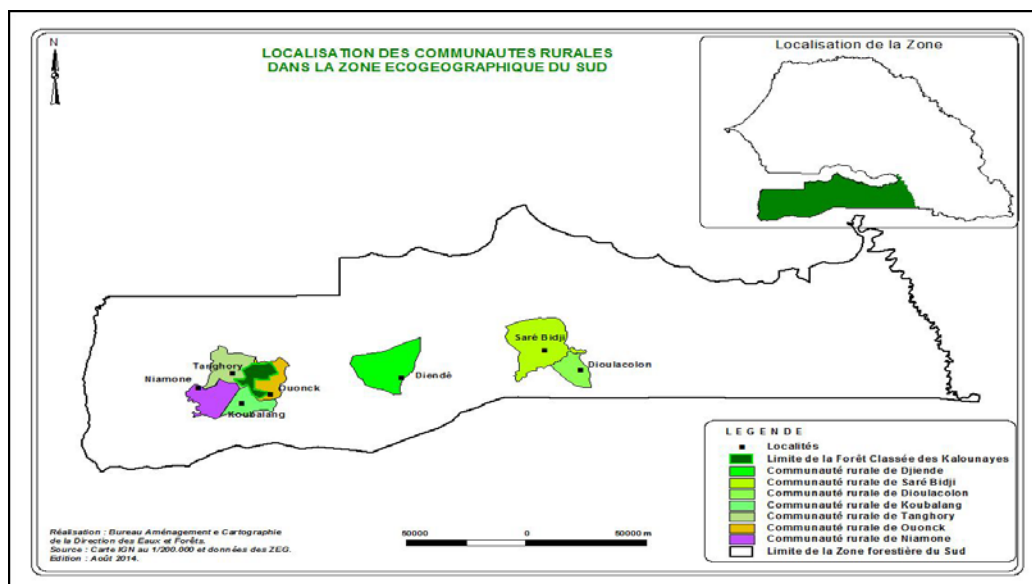


FIG 2: Target sites in Casamance ecoregion

- The rural council of Saré Bidji covers 375 km<sup>2</sup> with 16,982 population and numbers 93 villages. The main activities are agriculture, livestock raising, fishing, trade, handicrafts and logging. Recorded rainfall is approximately 1000 mm/year. The sandy-clay soil suitable for growing millet, sorghum, maize, rice and fonio covers over 90% of the land, followed by sandy soil (groundnut and millet) and then the pebbly soil of the plateaus. Excessive land use and the gradual

abandonment of leaving plots to fallow are contributing factors to soil degradation. Added to these are bush fires and wind and water erosion.

- The rural council of Dioulacolon covers approximately 179.57 km<sup>2</sup> with 14,980 population and numbers 56 villages and borders the Saré Bidji CR to the north. Agriculture is the main activity, followed by livestock raising with real potential for poultry farming and fish farming. Logging, handicrafts and trade are also significant. The average annual rainfall ranges between 900 and 1200 mm. It borders the Saré Bidji CR, and the same types of soils can be found there.

## I.2. Climate change - induced problem

A detail report on Climate changes in project target sites is presented under the PPG Report 1.

In summary, temperature trends in the Niayes and Casamance, between 1940 and 2012, are rising (Fig 3). The upward trend is more pronounced in the Ziguinchor region with about 2.6 ° C increase. The analysis also shows that the last decade was the warmest on record since 1950, especially in Casamance. These results were confirmed by several studies conducted in the Sahel (Ly, M., 2013)

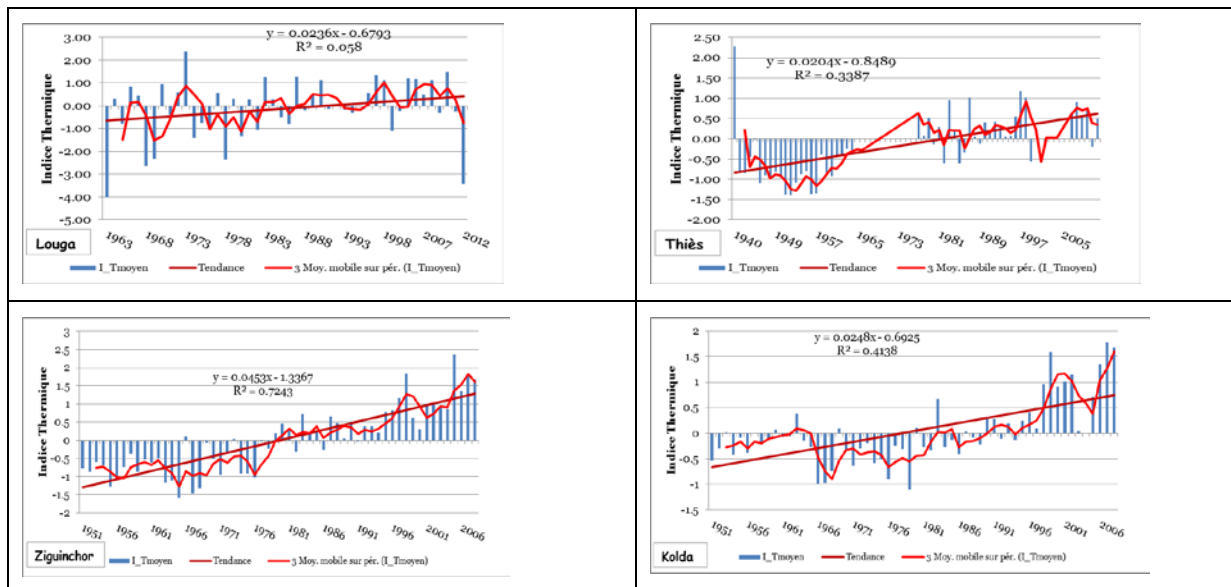
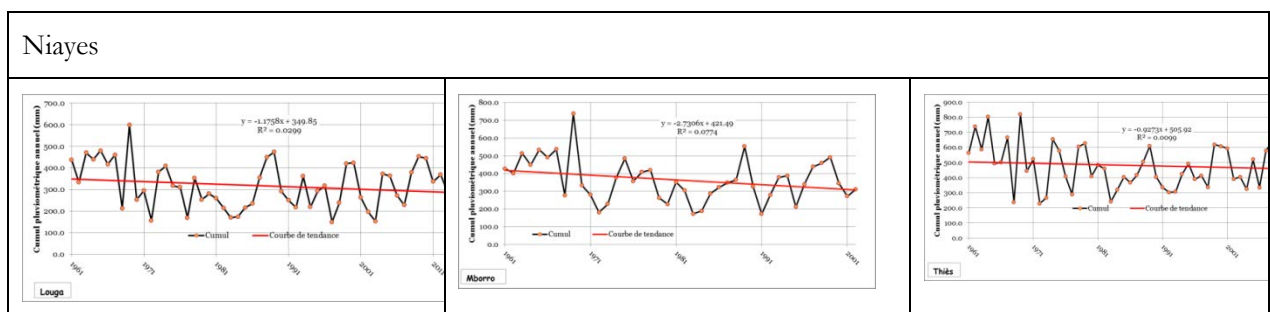


Figure 3: Change in average temperature in the Niayes and Casamance

The comparison of average rainfall between the two periods of 1950-1970 and 1970-1990 shows a shift in isohyets throughout the country. Indeed, the 400 mm isohyet which was around 16 ° North during the 1950-1970 period moved south over 100 km at around 15 ° north for the period 1970-1990. A decrease in rainfall of about 200 mm was observed over most of the country with the exception of Casamance where it is more pronounced, with about 400 mm. As for the period 1990-2010, it is marked by a "recovery" of rainfall resulting in a slight move towards the North of isohyets compared with the period 1970-1990. This recovery is much more pronounced in the eastern half of the country compared to the coastal areas. An analysis of changes in rainfall between 1961 and 2013 in the Niayes and Casamance shows strong within-year variability of rainfall and declining trend of total rainfall (Figure 4).



## Casamance

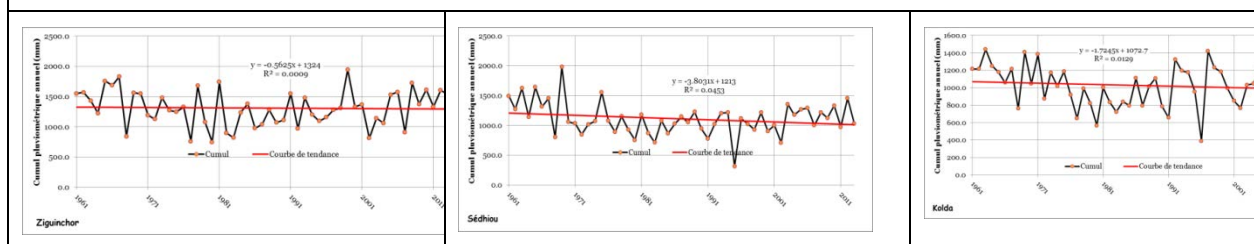


Figure 4: Changes in annual rainfall and trends in the Niayes and Casamance in 1961-2013

This decrease in rainfall is much greater in the Mboro district of the Niayes and in Sédhiou for the Casamance. In these areas, the occurrences of pauses in rainfall are quite high and often compromise the chances of success of rain fed crops.

Scenarios of climate change in Senegal prepared under the second National Communication on Climate Change in Senegal shows temperature increases of about 3 ° C in the period 2031–2050, and of 8.5 ° C for 2100. The rains are usually decreasing for all scenarios for the period 2006–2040.

Rural communities depend heavily on ecosystems which products and services are often the only means for their livelihoods. The degradation of these ecosystems has increased dramatically as a result of human activities, but also due to climate change. The main potential and expected impacts of climate variability and change in the medium and long term are following.

In the eco-geographic area of the Niayes, climate change has caused the early depletion of water ponds and the deepening of the water table. This situation is also accompanied with salt water intrusion and thus the salinization of the water table, the main source of water for farms (vegetable, tree, forestry, poultry ...etc.). Key economic activities and ecosystems most affected are:

- **Horticulture:** The split of the seasons (dry, cold, rainy) is no longer neat and has resulted in the disruption of agricultural calendars. Therefore, farming techniques are no longer appropriate, and inputs including seeds are no longer effective. The limited availability of agricultural inputs (seeds, fertilizer, water ...etc.), the resurgence of pest attacks, and limited agricultural technologies will continue to affect yields of horticultural enterprises, especially those undertaken by women who remain highly vulnerable, as long as effective adaptation measures are not implemented. In addition, sea spray conveyed by sea breezes that flow in the area during unexpected periods, and the harmattan winds cause significant damages to crops. Given the low level or absence of close protection (windbreak) the negative impacts on vegetable production, especially for onion, are alarming. The lack of effective adaptation strategies for the short, medium and long term results in the persistence of this situation that is a real threat to the horticultural industry in the Niayes and to food security for the entire country because this area accounts for 60% of the national production of vegetables.
- **Vegetation band:** The protection functions (fixation of sand dunes, protection of vegetable farms, houses...etc.) and production (fuel wood, lumber, seeds...etc.) of the band of vegetation are well appreciated by local communities along the northern coastline of Senegal. The plantations of casuarinas were established between 1948 and 2004. The casuarinas specie is well adapted to high sunny conditions and is tolerant to salinity, but the increasing levels of temperatures and salinity are contributing to high mortality rates of the plantations.
- The **groundwater** resources: Declining rainfall and higher temperatures result, on one hand, in salinization and degradation of the groundwater, particularly in areas covered by sand dunes with the lowering of the water table, and on the other hand, in early depletion of surface waters due to high evaporation. Rising temperatures associated with the effect of the harmattan increases water requirements of plants because of high evapotranspiration. This trend combined with high demands for water and wasteful watering techniques does not favor the sustainability of water resources in the Niayes.



- **Impacts on health:** The Chemical Industries of Senegal (ICS) releases ammonia into the atmosphere. The pollutant gets blocked in lower layers by thermal inversion and is transported directly to homes and crop fields in the east or west directions. This toxic pollutant causes burning of the leaves of vegetable crops and fruit trees, diseases in humans and animals, pollution of the water table in some areas as evidenced by the case of abandonment of wells in some towns in the area etc. In this area, the risk of acid rain can be expected if the amount of ammonia reaches certain proportions during the rainy season. If the morning fog contains this pollutant has the same effects on crops and fruit trees in the area are observed.

In the eco-geographic area of Casamance, modifications induced by climatic change include salt-water intrusion in the continent, salinization of mangrove mudflats and rice fields, degradation of mangroves, loss soil fertility in the plateau areas due to erosions and related siltation of rice field, and forest degradation. This has led to changes in production systems practiced before. Between 1985 and 2006 changes are observed in the land cover. With respect to natural vegetation, there is a decrease in the area occupied by woodland and forest. This explains the increase in areas covered by savanna landscapes and tree species. The same downward trend is observed for the mangroves resulting in an increase in area of degraded mangroves. The mapping conducted by CSE shows a mangrove surface area coverage of 102,303 ha in 1985, 89,999 ha in 1993, and 90,381 ha in 2006. With regard to surface areas covered by crop fields, the mapping shows a total of 357,776 ha (73,655 ha of rain fed rice fields, and 28.4121 ha of rain fed crops) in 1985, and a slight decrease in 2006. Key sectors of economic activities most sensitive and most affected by climate change, and thus requiring adaptation measures, include, rice cultivation, mangrove forest, and highlands. The main sectors with current and expected impacts of climate change and variability in the medium and long term are:

- **Rice fields:** The increasing salinization of rice field has caused many women to abandon their rice fields. A main consequence of rice fields becoming unusable due to excessive salinity is the massive deforestation in the highlands for new farmland, and bushfires, combined with uncontrolled logging. This deforestation leads in turn to soil and water erosion that causes the progressive siltation of rice fields, provoking a further decline in rice fields. It is estimated that rice fields abandoned due to acidity and salinity totaled 130,000 ha between 1970 and 1986. In the early 1970s, the share of Casamance represented 70% of the national production of rice. Now it represents only about 32%, about half of what it was <sup>1</sup>Furthermore, the reduction in the duration of the rainy season and more frequent pockets of drought, and un-adapted rice varieties aggravate problems the rain fed rice cultivation is faced with. This situation exposes Casamance to more food insecurity because rice is the main food staple in rural and urban communities in Casamance. The regression of rice cultivation is partly offset by the development of new economic activities (cultivation of peanuts and millet, vegetable gardening, salt production, forest fruits harvesting...etc.). Efforts to rehabilitate the valleys by reducing the salinization and acidification have experienced very limited success due in part to increasing water deficits.
- **Mangroves:** The mangrove ecosystem of the Casamance estuary and lower river basin is remarkable because of its important biodiversity, and its ecological, economic and socio-cultural functions. The ecological functions include being an important spawning ground with a fauna dominated by fish, crabs, shrimp, birds, oysters and other shellfish. It acts also as a buffer between the sea and the mainland, reduces coastal erosion, and protects against the effects of winds, and waves. Where there are vast tracts of healthy mangroves, coastal villages suffer less damage. The island of Carabane has been severely eroded because of the degradation of the mangroves, which play a critical role for its protection. Mangroves provide important forestry and fishery resources to communities. The economic products and services provided by mangroves include firewood, fishing, harvesting of oysters, medicinal plants, rice fields...etc. The mangrove areas play also very important cultural functions such being used as sacred forests for traditional customs and practices (totem, funerals, and various ceremonies). Mangroves provide also important sites for research and training. The beauty of the landscape attracts more and more tourists, contributing to the development of tourism, which is a significant economic activity in Casamance. Currently, mangroves in Casamance are subject to overexploitation of its timber and wildlife products. Climate change impacts include significant increases in salinity accelerating the

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<sup>1</sup> DAPS: WFP Study on Food Aid Impact and Role in Casamance, June 2007

degradation of mangrove ecosystems. Reforestation activities undertaken by NGOs and community based organizations show that it is possible to carry out successful activities of mangrove restoration with a focus on community participation, especially the involvement of women.

- **Forests:** In addition to the negative impacts of climate change on forests massive fraudulent exploitation of forests in Casamance causes serious threats to forests in this region. Areas classified as protected area suffer from various forms of degradation, as well, affecting diversity and plant density. It appears from the land mapping done by CSE in 2008 on a total area estimated at 1,468,506 ha of different forest formations, there are dramatic changes on forests and woodlands due to natural stress on about 13% for the area studied, and conversions due to encroachment on forest reserves estimated at 6% of the same area. These modifications and conversions are largely due to the impacts of climate change (reduced rainfall, higher temperatures) that led to the salinization of streams and wetlands, degradation of forests and farmland, and decline crop yields. This situation has resulted in lower incomes. To make up for these losses local populations rely more and more on forest resources leading to further forest degradation and being trapped in a vicious circle.

In conclusion, almost all social, economic, and environmental aspects in the two project areas are already seriously affected by the observed impacts of climate change. It is also certain that these impacts will be exacerbated in the short and most likely long term as well. The Intergovernmental Panel of Experts on Climate Change (IPCC) mentions in its 2007 report that LDCs, because of their low level of development will have technical and financial difficulties to deal with climatic changes and their impacts, and are considered among the most vulnerable countries to Climate Change. The report also indicates that for West Africa in particular impacts due to the increase in temperature and decrease in rainfall will cause significant levels of agricultural and GDP losses. Existing risks that could be exacerbated by climate change include greater erosion and low yields for rain fed agriculture, among others. Small farmers, who are the majority in rural areas, would be hardest hit with the decline in agricultural production, loss of income and population displacement, i.e. a deterioration of living conditions if appropriate measures are not taken.

The impact of climate change on populations' health is real. Indeed, a significant correlation was noted between the morbidity due to certain diseases and rainfall throughout the project's target areas. For example, in the two target areas, morbidity due to malaria is particularly high during the rainy season. In the same vein, rising temperatures are affecting the elderly and infants. Moreover, when soils in dry lands are loose, easterly trade winds cause an increase in dust that can provoke respiratory diseases. The wind regime acts as a transport agent of disease vectors and harmful pollutants.

### **I.3. Preferred Situation and Barriers to Overcome**

Despite various strategies, policies and measures that were undertaken, the current socio-economic situation in the Niayes and in Casamance is characterized by low resilience to climate change and variability. The weakness of the physical environment (low and erratic rainfall, low groundwater levels, salinization and soil degradation, loss of biodiversity, regression of mangrove and forest) under high human pressure and degradation of systems and production tools have led to falling incomes of local people. The sources of income for local communities mainly based on the services and products from these ecosystems will be increasingly affected by the impacts of climate change and variability. Unless appropriate solutions are implemented, these effects will have negative impacts on productivity in all sectors, resulting in difficult socio-economic conditions, including increased poverty and an impediment to national development efforts.

**The long term solution**, would be to promote the adoption of integrated agro-sylvo-pastoral systems and practices that are resilient to climate change and variability, that will improve horticulture and rice production, strengthen the protective and production function of the band of casuarinas and ensure sound management of water resources, forests and mangroves for the benefit of local communities in the project target areas of Niayes and Casamance.

The long-term solution for local communities' sustainable resilience to climate change will necessarily involve an understanding of climate information with the implementation of adequate financial, institutional and technical measures for a better adaptation of the socio-economic activities to climate

change. Therefore, these challenges, sources of population vulnerability must be overcome by the producers to adapt to climate change in order to increase the resilience of the production systems in the intervention sites identified in the Niayes and Casamance. The stakeholders (institutions, producers, producer organizations, local governments, NGOs, etc.) in the project areas have identified the barriers presented below. Although these barriers are presented separately, they are linked.

**Barrier #1:** Inadequate production systems challenged by climate change and variability:

As stated previously, climate variability within seasons is a serious problem in the project target areas. This reality has a decisive impact on the agro-sylvo-pastoral production level in these areas. Climate change has resulted in the shortening of the rainy season, the disruption of the seasonal cycle (dry, cold and rainy) and the disruption of the cultivating and sowing calendar. All these disruptions are not without impact on the market garden cycle and rain-fed agriculture (rice production and food crop) and the low productivity of livestock and forestry systems. Agro-forestry and cattle ranching management systems are no longer adapted to climate variability. This affects farmers' yields, especially women who remain highly vulnerable as long as, effective and sustainable adaptation measures are not carried out.

The contribution from support and research institutions and decision-makers at all levels to help producers remove this barrier by developing appropriate production systems to climate change is low, including a very limited development of agro-forestry and livestock species adapted to climate change and variability. This situation is similar regarding the development of technical packages that take into account climate variability. In addition, there is a lack of ecosystem approach such as the watershed approach in the management of agro-forestry and cattle ranching areas.

**Barrier #2:** Weak institutional capacity for climate information production and dissemination

The challenges due to climate change adaptation in the Niayes and Casamance, including those connected to barrier 1 above, require equipment and operating institutions capable of reducing the deficit on the production and access to climate information. In the project's two target areas, the meteorological and rainfall stations are far from meeting required standards. There are several shortcomings including the lack of well-functioning measurement instruments, human resources in needed quantity, logistics for data collection and adequate equipment for data processing (software, computers, etc.). In addition, there is a need for human and material resources for communicating climate information in a language that is accessible to different users (research and extension services, administration and decision makers at various levels and local people).

**Barrier#3:** Insufficient capacities of local communities, technical services and decentralized administrations to develop and implement adaptation practices to climate change.

Local communities and technical and administrative services at different levels (national, regional and local) are hampered by their legal, regulatory, financial and technical constraints. Here are some examples:

- The governance of natural resources, a critical aspect for adaptation based on land and ecosystem management, a major theme of this project, has serious flaws because of the coexistence of customary law with that of the national land management legal framework;
- Funding local activities is a major handicap because of low local government budgets (less than US\$ 20,000 per year on average) and non-decentralized trend to finance development;
- Illiteracy and lack of training of most local officials are an exacerbating factor;
- Availability of managerial services in quality and quantity is a serious handicap;
- Finally, the lack of coordination between government and non-government stakeholders is a problem at different levels.

These various weaknesses and challenges lead to the following problems.

- Limited experiences in the consideration of scientific information including climate: To cope with climate change and variability including the lifting of barrier 1, producers and institutions (research & development) initiated adaptation strategies that are still inadequate. Indeed, these strategies are applied at very small scales and developed without the benefit of appropriate scientific knowledge. These strategies are mainly based on traditional knowledge that is far from being adequate due mainly to the rapid changes. For example, for the livestock sector, the measures consist of reducing herd size and migration to richer pasture. In agriculture, for instance, the emergence of agricultural areas around boreholes for market gardening is noticeable; initiatives towards the use of early maturation seed varieties developed by research institutions

(sorghum, millet, peanuts, rice, etc.); crop monitoring and advice to producers on critical planting dates and useful rain required for sowing, etc. This support by the research and extension services to producers is well intentioned but produces very limited effects because of a lack of relevant climate information.

- Local Governments limited ability and insufficient awareness: Regional and local political and administrative authorities lack the capacity and a sufficient awareness to manage the effects of climate change and variability. Local development plans level of implementation is low and it is necessary to channel available resources towards activities and resilient investments by incorporating climate risk in municipal budgets. In this regard, the general knowledge on climate change and its consideration in the strategies and development programs are generally low at all levels (national, regional, county and municipal).
- Government technical services with limited capacity: National technical services at different administrative levels are responsible for the technical support to local communities for the implementation of various activities of economic and social nature and the protection of the environment upon which most of these activities depend on. However, the technical staff has very limited resources to fulfill these responsibilities. In general, public services at national and local level suffer from inadequate physical presence both in quality and quantity. Decentralized departments of agriculture on which the majority of rural people rely, as well as the weather forecasting support system, whose role for increased resilience is critical, are no exception. This situation leads to low institutional capacity of decentralized government and the support provided by the decentralized technical services at the local level is far from covering the needs. Therefore, decentralized technical services should be strengthened and farmers need more information and demonstrations of options for adaptation.
- Weaknesses linked to social rules and policies including gender and birthright: Gender issues and birthright constitute major constraints that can be summarized as follows. Women in the project target areas and the rest of Senegal are seldom sufficiently involved in identifying problems and solutions and in the decision making process. In addition, women are faced with problems that are unique to them: (i) unfair access to production resources including land, training, funding, etc.; and (ii) an unfavorable distribution of roles and responsibilities between men and women in the production and social life. Considering the percentage of the population they represent, the important role they play in all fields and their remarkable capacity of mobilization, women's involvement is essential to improve the resilience of local communities. Moreover, concrete examples demonstrate the importance of specific adaptation strategies implemented by women's organizations that can be powerful agents of change.

The Senegalese youth, including those in the project target areas, present the following important characteristics: (i) this most educated group has become increasingly the largest section of the population; (ii) young people are more open to new ideas and technologies, which are essential to adapt to climate change and variability, which present new challenges that require new knowledge and attitudes. These essential assets for resilient living conditions are often seriously impaired by some traditional customs, including the birthright, which means that the oldest always lead. Young people are also restricted on many issues related to land and ecosystems management.

**Barrier #4:** Producers and households with low technical and financial capacities: The vast majority of people in the project target areas are victims of extreme poverty causing extreme limited technical and financial capacity to adapt to climate change.

The project areas are characterized by low productivity of agro-sylvo-pastoral activities linked to underuse of agricultural inputs and appropriate equipment, in addition to a strong dependence on rainfall and fragile ecosystems. Producers (growers, ranchers, loggers, oyster harvesters, rice farmers, farmers, etc.) have very limited financial resources. This results in limited equipment and access to inputs and technical guidance needed to overcome the precarious living conditions.

Due to the population's low income levels and limited access to credit, farmers and households do not have the financial resources to make required investments to adapt to climate change: such resources include new technologies to make agro-sylvo-pastoral activities more resilient; and diversification of activities for better risk management.

Combined with high population growth, this situation causes an increase in areas used for agro-sylvo-pastoral activities and its corollary alarming degradation of ecosystems that in turn exacerbate the impacts of climate change.

## II. PROJECT STRATEGY

### II.1. Country ownership: country eligibility and country drivenness

As a Least Developed Country (LDC), Senegal is eligible for the [Least Developed Countries Fund \(LDCF\)](#) managed by GEF. Senegal is a Party to the UNFCCC, having ratified it on December 1994. The country is also a signatory of the Kyoto Protocol since 2001. As required by the UN Framework Convention on Climate Change, Senegal prepared the first National Communication in 2000 and completed the National Adaptation Plan of Action (NAPA) in December 2006. These reports are prepared with the support of the National Committee on climate changes (COMNACC) and through a participatory approach involving all national stakeholders involving diverse stakeholders. The country is also hosting the Interim Secretariat of NEPAD. The proposed project constitutes a response to urgent and immediate adaptation needs. It is designed to address the additional costs of priority adaptation measures identified in the NAPA and it will also create the necessary capacity to continue to do so even after project completion (sustainability). The ratio of LDCF funds to co-financing is consistent with the sliding scale<sup>2</sup>.

The project is also in conformity with a variety of other initiatives aimed at furthering the development of Senegal.

- The project is anchored in the National Social and Economic Development Strategy (SNDES) (2013–2017), the framework for economic and social development in Senegal. It will contribute to overcome challenges identified in the following strategic areas of the SNDES: (i) growth, productivity and wealth creation; (ii) human capital and sustainable development; and (iii) governance, institutions, peace and security. The project will help reduce the impacts of climate change on local development activities through the promotion of appropriate adaptation technologies and the involvement of all stakeholders in the formulation of local development priorities.
- Senegal has adopted a new development plan in 2014, Senegal Emergent Strategic Plan (PSE) which is an economic and social planning document defined by the government as "the country's main economic and social policy over the medium and the long term", based on the vision of an emerging Senegal in 2035. The project is anchored on the PSE Axis # 2 entitled "Human capital, social protection and sustainable development."
- The project is anchored in the General Objective # 2 of the Sectorial Policy Letter on Environment and Natural Resources (LPSEERN), which aims to "Stepping up the fight against the current trend of environment and natural resources degradation in accordance with relevant international conventions" and Axis # 1 of the LPSEERN: "The fight against deforestation and land degradation" which is "the stimulus plan of the Senegalese economy " based on the human capital development and fair governance.
- The Planning Document of multi-year expenditure (DPPD) (2013–2015) from the MEDD: is "a tool for strategic and operational planning aimed at the tracking of public expenditure and the monitoring of expected results. This monitoring and assessment provide information on the quality and relevance of strategic orientations in the medium term. This document actually replaces the CDSMT, which is an expenditure framework and financial programming document". It highlights all expenses related to the implementation of departmental programs. This document serves also as a tool for tracking programs and projects expenses related to their anchor program within the MEDD. This project is anchored at DPPD program #2 aimed at achieving the Priority # 1 of the LPSEERN.

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<sup>2</sup> GEF/LDCF, 2006, Articles 18 and 19

- The project will contribute to the implementation of the Agro-forestry and Pastoral Law (LOASP), which focuses on the creation of an attractive environment in rural areas and the promotion of the family farming. This new agricultural policy is based on the move from extensive to intensive production systems, for diversified and sustainable production. The specific objective of the agro-forestry and pastoral policy is to reduce the impact of climatic, economic, environmental and health threats through rational water management, diversification of production and training. This project is expected to contribute to the achievement of the objectives of the LOASP at the local level by supporting the integration of climate change adaptation practices.

## II.2. Project rationale and policy conformity

The project complies with Senegal's National Adaptation Programme of Action (NAPA). The NAPA identified four priority sectors: coastal protection, agro-forestry, water resources, awareness and education. The proposed project will address NAPA priority identify in Niayes and South regions focused on dunes protection, mangrove restoration and water management (Component 2). In addition, relevant climate information will be provided to help technical services and communities to better plan and manage climate risks (component 1).

The project is consistent with the guidelines defined by the LDCF. It is developed along the lines of the « *Programming Paper for Funding the Implementation of NAPAs under the LDC Trust Fund* »<sup>3</sup> and its formulation has followed the guidelines of UNDP/GEF « *Adaptation Policy Framework for Climate Change* ».<sup>4</sup> The project is consistent with LDCF criteria, notably: (1) follow a country led participative approach; (2) operationalize NAPA priority; (3) support hands-on approach (learning by doing); (4) adopt a multidisciplinary approach; (5) promote gender equity; (6) follow complementarity. More specifically:

- *Follow a country led participative approach:* This project is elaborated through a participative process. Key stakeholders and a selection of direct beneficiaries have been involved in priority settings and project design. The Directorate of Water, Forests, Hunting and Soil Conservation has led project formulation. The process of elaboration of the project document is on following steps:
  - i. Work sessions with MECNT, UNDP and the team of consultants to: (1) develop a common understanding of the project; (2) building a consensus on the information to cover for each sector: agriculture, forestry, water management, etc.; (3) establish a schedule for stakeholder consultation;
  - ii. Organisation of the PPG inception meeting held in Dakar on March 2014 (**PPG Report 2**) with the participations from Ministry of Environment (including all ministerial department and their representatives in project target regions), Ministry of Finances, ANACIM, research institutes, NGO, Consultants and UNDP. The outcome was to: (1) develop a common understanding of the project; (2) establish criteria for the selection of target; (3) guide the consultants on the methodology for the collection of data, and (4) develop PPG roadmap.
  - iii. Organization meeting series at national and local level (with regional, departmental authorities and representatives from communities and consultants, NGOs and other stakeholders) to analyse the situation and agree on the content and the operationally of the project. The ANNEX 2 present key institutions and organisations that contributed to the project design. The team of 3 consultants (meteorologist, forest experts, and socio-economist) organised more than 5 meetings with beneficiaries, technical regional services and other key partners intervening in the project areas. The Mission Report (**PPG Report 3**) highlights findings of field missions. Results from consultations are recorded in sectoral reports (see **PPG reports 1,4 &5**) The stakeholders participation plan in **ANNEX 3** identify the key stakeholders and their interests relative to the project and describe how stakeholders will be involved in the implementation of each project outcome.
  - iv. Organization of a mission to the demonstration sites of the project with consultants, meetings with regional, departmental and council's authorities and target communities to select key activities and target sites.

<sup>3</sup> GEF/LDCF, 2006

<sup>4</sup> UNDP/GEF 2005

- v. Development of the draft document for the project by the International Consultant, circulation of the draft document and comments from stakeholders;
  - vi. The project strategy, the logical framework, budget and institutional organization of the project were presented and validated during a national one-day workshop held on July 2014 (PPG report 6).
- *Support hands-on approach:* This project provides opportunities for local communities to develop integrated agro-sylvo-pastoral systems and practices that are resilient to climate change and variability, that will improve horticulture and rice production, strengthen the protective and production function of the band of casuarinas and ensure sound management of water resources, forests and mangroves for the benefit of local communities. Measures to strengthen resilience will be adapted to local needs expressed by the communities. Cost-benefits analysis will be realized in the frame of the M&E activities, and will inform good practices on strategic issues included land use.
  - *Promotion of gender equality.* Gender considerations were part of the process of project formulation. During the preparatory phase, efforts were made to involve women's groups and youth, as well as civil society and institutional leaders in the group discussions. Key issues were identified during the process, including the need for information on gender. Thus there is provided in component 2 (Product 2.3) to implement adaptation initiatives, community-based small-scale activities with youth associations and women from target councils, focused on the development of alternative livelihoods resilient activities to climate change.
  - *Following a complementary approach,* this project will complement other programs and projects that are being implemented of course in the area intervention with different goals and priorities; a steering committee will be established and will consist of representatives of the ministries involved in the project, representatives of the local authorities. This will ensure the consistency between the project and other projects of UNDP in the Senegal as well as other relevant projects and activities funded or implemented by other development partners. The project will build on the results and outcomes of these initiatives and use their lessons learned, tools developed and will work with local partners that shows more reliability.

The project was designed to comply with the general requirements of the GEF for the formulation and operationalization. The following criteria were considered and incorporated:

- *Sustainability:* The project was designed to have sustainable impact at both community and national level (see also below the sustainability section). The overall project sustainability is ensured through a strong Government of Senegal ownership and commitment to a successful implementation of this project. The institutional sustainability is expected to remain high: capacity will be strengthened to promote transparency, coordination, efficiency, partnerships, and to develop community involvement. The technical sustainability for this project is expected to be high as best practices and technologies that will be used in the project have been successfully tested and used by UNDP.
- *Monitoring and Evaluation (M&E):* Project implementation will include an effective M&E plan (see below M&E section). Lessons learned will be developed as the project is being implemented and will then be shared to become a reference and a learning opportunity for other similar initiatives.
- *Replication:* The project has a demonstrative character, as it focuses on setting up tailored integrated interventions in the selected councils. This will facilitate the replication of the project in other parts of the same municipalities/circles and Regions and in other parts of the country with similar characteristics.
- *Involvement of actors:* The project will facilitate coordination and participation of different stakeholders, included those involved in environment management and development planning. Annex E presents the stakeholders' analysis and their involvement in implementation of the project.

This project supports national development goals and plans to achieve Millennium Development Goals (MDGs) 1, 3 and 7.

- *MDG 1: Eradicate extreme poverty and hunger* – at least 5000 households will be supported to develop climate resilient livelihoods activities to improve household's livelihood. Key adaptation measures will be promoted in order to enhance agricultural and generate income for vulnerable households,

specifically women. Means and skills will be to help them to be prepared and act appropriately and effectively in a timely manner, in case of climate shocks. Seasonal forecasts can enable the rural population to take adaptive farming measures to protect productivity;

- *MDG 3: Promote gender equality and empower women* – Adaptation measures and relevant associated training will be tailored to end-user needs, in particular the needs of women who have little access to climate information. Women’s group and association will become partners in the implementation of climate resilient adaptation and awareness activities. As highlighted in section II.2, the project aims at implementing adaptation measures in a very participative fashion, through the inclusion of all social groups, also the marginalised, to guarantee maximum coverage of impact and structural consideration of the most vulnerable (and exposed to the impact of climate change) in planning adaptation interventions and early warning in the areas receiving beneficial effects.
- *MDG 7: Ensure environmental sustainability* – The foundation of this project is to ensure environmental sustainability by promoting mangrove restoration, water management and soil Protection and Restoration / Soil and Water Conservation measures. This approach can assist in the sustainable use of natural resources through good land- and watershed-management practices.

### II.3. The design principles and strategic considerations

#### On-going relevant national initiatives

The LDCF financed project will be implemented in the framework of on-going national efforts to strengthen local development and restore socio-economic living conditions of communities. It will contribute to on-going initiatives aimed at increasing production and marketing in Niayes and Casamance, supported by the Government of Canada. It also builds on UNDP/EU led efforts to protect coastal and marine resources. Key baseline projects investment for the proposed LDCF financed initiative include the following:

Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) - *Programme for Land Use and Economic Development of Niayes*, (PADEC –2009-2018 financed by Foreign Affairs, Trade and Development Canada). The goal of this initiative is to increase production and marketing of onions, garlic, potatoes, beans, tomatoes, cabbages, limes, watermelons, mangoes, papayas, and strawberries in the Niayes region. The purpose of the project is to increase the incomes of 17,000 producers (women and men), to make them true entrepreneurs, and to protect the region’s natural resources. At least half of these producers are women. Additional funding from LDCF is expected to protect vegetable production from climate change impacts (e.g. increase of wind leading the sand encroachment). LDCF resources will build on this project by promoting climate resilient adaptation options that help to restore/protect Niayes critical ecosystem.

Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) - *Economic Development of Casamance Programme (PADEC- initial phase 2010-2015 financed by Foreign Affairs, Trade and Development Canada)*. The goal of this initiative is to support about 10,000 small-scale producers (women and men) active in the honey, mango, cashew, and banana supply chains in Casamance. An approach based on value chains, including all links in the chain (from production through processing to marketing) is favoured for this purpose. The programme is targeting operators (individuals, community groups, and associations), apex organizations, and policies and institutions (Government of Senegal, central and/or extension services, and local communities). Additional resources from LDCF are expected to provide climate information and support the development of adaptation technologies to support the resilience of the supply end of the value chain associated with these crops.

EU/WWF/UNDP: “*Programme on Coastal and marine resources Governance in the West African Ecoregion*” ([http://www.undp.org/content/brussels/en/home/partnerships\\_initiatives/results/strengthening-governance-and-management-of-marine-resources-in-w.html](http://www.undp.org/content/brussels/en/home/partnerships_initiatives/results/strengthening-governance-and-management-of-marine-resources-in-w.html)). With a total budget of US\$ 14 Million (2012-2017), of which the expected co-financing for this LDCF project is approximate US\$2 Million), the programme aims to strengthen and promote the adoption of best practices on sustainable use of marine and coastal resources in the West African Marine and Coastal Ecoregion (WAMER-7 countries). This baseline project will contribute towards developing communities and technical management capacities of the coastal zone through: the establishment of sustainable financial mechanisms at local level, (linked with component 1); and enhance resilience of local communities through promotion of suitable technologies for the rehabilitation of coastal erosion, management of climate risk (linked with component 2).



Additional resources from LDCF will enhance capacity of technical services in Casamance and Niayes coastal areas to better manage resources under changing climate.

#### National and local benefits

In term of socio-economic and environmental benefits, the project will help to decrease the exodus of rural population to urban centers and migration with the restoration of land and ecosystem (youth and women can now develop economic activities related to the wise use of mangroves resources and exploitation of Niayes). This will improve income-generating opportunities and therefore limit the migration process toward big cities. Furthermore, national and local institutions will strengthen databases, access to climate information to better manage risks on ecosystems. Investment will contribute to the preservation and restoration of natural habitats and ecosystem integrity. Co-benefits are expected with the increased carbon sequestration and biodiversity conservation.

Given the importance of the traditional participation of women in natural resource management, activities will explicitly support a gender-sensitive approach through gender-specific measures. The specific needs of women producers will be considered at all stages of project design, from preliminary Vulnerability and Capacity Assessments to project implementation, and particularly when developing climate-resilient income-generating activities (that will be designed to meet their needs), sustainable mechanisms for transmission of climate and weather forecasts (that will be important to their decision-making imperatives and delivered using channels that are relevant to them) and also updating regional plans/programmes and projects. At the same time, recognition will be given to women's comprehensive knowledge of and experience with respect to, for example, seed selection, medicinal plants, local hydrology, and community transformation, as well as coping strategies that can promote adaptation to climate change. Information about climate change and adaptation measures must therefore be designed and disseminated in gender-sensitive ways and be combined with explicit efforts to ensure that women and girls – especially those who are poor or have been denied the right to an education – can easily have access to and absorb the necessary information

#### UNDP comparative advantage

Present in Senegal since 1975, UNDP is supporting the efforts of the Senegalese Government in improving the living conditions of communities in line with the priorities identified by the Government through its planning frameworks (DSRP, SNDES, PSE) and sectorial policy letters. Strategically, this support has contributed to: (i) integrate adaptation into national, sectorial and local planning; (ii) strengthen institutional capacity for adaptation; and, (iii) remove the political barriers and promote community management of natural resources. At an operational level, this assistance has contributed to: (a) the introduction of reliable and replicable methods of rehabilitation of degraded lands through integrated soil fertility management, agro-forestry and water and soil conservation, as well as the development of participatory management plans; (b) improve the participatory management of pastoral units and communal natural reserves, resulting in the reduction of bush fires and a fair legal access to farmland for farmers; (c) the establishment of savings and green credit institutions which funding is aimed at a sustainable use of natural resources; (d) the diversification of sources of income for the fight against poverty; and (e) the introduction of the eco-village model. These accomplishments have been achieved through partnerships including with the GEF.

Based on areas of cooperation identified in the Country Program Action Plan (CPAP) 2012–2016 jointly signed between UNDP and the Government, “the support for adaptation to climate change” is one of three priority areas of the program cycle. The UNDP assistance has two components: (i) supporting the formulation of national policies resilient to climate change; and (ii) developing pilot sites resilient to climate change. UNDP supported the government efforts in the implementation of the Senegalese component of the Africa Adaptation Project. Support was provided to integrate adaptation to climate change in key development sectors and processes. With the “boots on the ground” Program, UNDP has placed national officers in 24 country offices (including Senegal) to provide policy support to governments on climate change.

At the local level, UNDP supports the effective implementation of the Climate Change Territorial Approach (TACC). This project is part of a partnership between the UN and decentralized government bodies, to promote climate friendly development at the subnational level. The TACC project supports the

integration of climate change adaptation and mitigation measures in development plans thru: (i) the development of partnerships with the United Nations and its specialized agencies, national governments, sub-national centers of excellence, regional technical institutions and the private sector; (ii) the provision of methodologies and tools, and best practices sharing for participatory long term planning of climate change related development in the regions and cities; (iii) provision of information on the challenges and opportunities of climate change and the technical and financial solutions for the regions; (iv) Provision of technical support for the preparation of integrated territorial climate plans, including the identification of mitigation and adaptation priority measures; and (v) Provision of technical support to identify policies and financing instruments to implement priority climate change adaptation options. The TACC project in Senegal is implemented in six regions (Fatick, Louga, Kaffrine, Tambacounda, Matam and Saint Louis).

Finally, at the institutional level, UNDP has supported the Government of Senegal to improve its capacity to absorb resources, including the introduction of mechanisms through support units for projects and programs within the Ministry of Economy and Finance. Currently, several technical and financial partners of Senegal use these mechanisms. This reflects the recognition of UNDP's effectiveness in improving the country planning capacity for project monitoring and control, transparency and tracking of external resources spending.

#### **II.4. Project Outputs and Activities**

Significant efforts have been made to address environmental issues and natural resources management with the signing of various international agreements including the Rio Conventions, the protection of nearly 40% of the country thru protected areas, adaptation efforts to climate change with the development of the country's National Adaptation Programme of Action (NAPA) and the implementation of several environmental projects and programs. Nevertheless, adaptation to climate change remains a major challenge for the country to overcome since Senegal remains highly vulnerable in all of its eco-geographic areas. Among the most vulnerable areas, the NAPA highlights the natural region of Casamance and the Niayes; hence, the relevance of the target areas and objectives of the project. The latest national communication from Senegal has shown the need to find lasting solutions to develop a "culture" of prevention and adaptation to climate change.

The purpose of this project is to contribute to this goal through its objective of strengthening an enabling environment for adaptation measures based on ecosystem management in the eco-geographic areas of Niayes and Casamance. Specifically, this includes improving or strengthening land and ecosystem management in the face of climate uncertainties that prevail in these two areas, particularly through: (i) good climatic forecasting and effective diffusion/use of climate information; (ii) strengthening the capacities of decentralized technical services, local leaders/decision makers, grassroots communities and individuals; (iii) better assessment of the vulnerability to climate change and the effects of adaptation; and lastly, (iv) demonstration, autonomous adoption and promotion of adaptation solutions or technologies able to reduce risks related to climate change in the Niayes and Casamance regions. The project will be developed around the three main components.

**Component 1: Information platform on climate change and socio-environmental aspects to identify vulnerabilities caused by climate change and propose effective adaptation options in the Niayes and Casamance regions.**

**Outcome 1:** Information management systems to determine and monitor the impacts of climate change on ecosystems are implemented for effective forecasting, preparation and decision-making.

#### **Baseline for Component 1**

##### Co-financing initiatives

LDCF financed project will take advantage of the Senegalese National Agency of Civil Aviation and Meteorology (ANACIM) existing capacities to coordination of all operations for meteorology and climatology research in the country and to collect, analyze and disseminate weather forecast services. The project will benefit from ANACIM's existing network of meteorological stations spread throughout the country. In the project target areas, ANACIM manages two synoptic stations in Cap Skirring and Ziguinchor and three agro-meteorological and climatological stations in Thiès, Kolda and Louga. ANACIM is also providing regular agro-meteorological and weather information on a daily, weekly, monthly, yearly and 10-year basis (<http://www.meteo-senegal.net/html/prdmtto.htm>). Furthermore, the LDCF funded project will benefit experiences of ANACIM on community early warning system. Within

the framework of the “Climate Change, Agriculture and Food Security” project, ANACIM implemented a pilot project in Kaffrine to demonstrate to farmers the added value of climate information in agricultural production. For this purpose, the following model was implemented: (i) identification of producers’ needs in terms of climate information and advisory services, ranging from seasonal forecasting to 10-day and daily forecasting; (ii) combining scientific and endogenous climate forecasting methods; (iii) creation of a local multi-disciplinary working group (GTP) bringing together technical services for agriculture, livestock farming, weather, research, fishing and local communes; (iv) capacity building for producers, government officials, community radio announcers and NGOs to gain understanding of forecasts; (v) setting up test fields to assess the added value of climate forecasting; (vi) collection of rainfall data with the goal of assessing forecasts (seasonal and intra-seasonal); and (vii) assessment by producers of the communications system and products. The expected co-financing associated with **ANACIM activities is US \$ 3,5 Millions** during the 5 years cycle of the project, taking into account all investments related to meteorological observation network, maintenance, and functional operations (see attached co-financing letter from the General Director of ANACIM).

With a co-financing estimated to be **US \$ 1,5 millions**, the Ministry of Environment and Sustainable Development (MEDD) established ecological data and monitoring systems across its technical departments to make availability information on the condition of natural resources and the environment, and strengthening operational, technical, and institutional capacities of the State and local communities.

- A national monitoring framework is developed by MEDD with operational environmental and socioeconomic indicators to quantitatively assess the state of the environment and pressure on natural resources. This framework is articulated around nine strategic priorities: (i) management of forest and wildlife potential; (ii) promotion of good citizen behaviour for the environment; (iii) preservation of the marine and coastal environment; (iv) promotion of popular participation and involvement of the private sector and local communities in managing natural resources and the environment; (v) improving the knowledge base of natural resources and the environment; (vi) strengthening the technical and institutional capacities of the State and local communities; (vii) contributing to conserving the global environment; (viii) controlling surface waters to improve agriculture-forestry-pastoralism and fish production; and (ix) control and operation of the multi-year expenditure.
- The Directorate of Water, Forests, Hunting and Soil Conservation has a long history — since 1973 — in the management of natural resources and the environment. It plays a key role for forest resources and has a vast network of Regional Inspections (IREF) that is well established in all regions under its authority. It operates mainly in the management of forests, wildlife, and soil conservation.
- Since 1987, the Ecological Monitoring Center (CSE) regularly monitors parameters related to vegetation (pasture), brushfires, rainfall, agriculture and livestock productivity, with the use of advanced technology such as satellite data. CSE use Geographic Information Systems (GIS) as management tools and for interpreting environmental and land use information. CSE publishes a yearbook on the environment and natural resources, as well as a report on the state of the environment in Senegal, making it easy for various national institutions to access information.

#### Other relevant initiatives (non part to the co-financing)

The General Directorate for Water Resources Management (DGPRE) monitors a network of close to one hundred (100) hydrometric stations located between the basins of the Senegal River, the Gambia, the Casamance River, the Kayanga Sine Saloum and small coastal basins. The data collected are used to develop hydrological weekly bulletins during floods and monthly during low flow periods, edit hydrological directories and to conduct studies on the behavior of rivers. DGPRE also established the integrated information system on water (SIIE) to improve the data management of water resources and their uses. As a tool for decision support, and for quality and sustainability of data assurance, this unifying IT platform is improving the accessibility of water data and information for professional users and the public.

Despite this government’s investment, the coverage of meteorological stations remains insufficient to effectively identify risks and predict potential impacts associated with climate change on land and ecosystems. In addition, the use of global and regional climate models (such as GCM, PRECIS) does not

generate sufficient information to effectively predict the impacts of weather patterns at a local level. There is a need to refine strategies at the local level, in terms of adaptation, downscaling, refining prediction, to make it more informative for a much localized adaptation option related to decision-making.

The collaboration needed between institutions involved in the production of climate information, on one hand, and its use at a national or local level, in the other hand, is very limited in the Niayes and Casamance. Relevant ecological, hydrological and socio-economic data remain scattered and managed by several institutions. Without collaboration for access to socio-economic and environmental information, the meteorological department has trouble estimating risks in areas such as agriculture, fisheries, water resources, and forest ecosystems, including mangroves. Although some limited information on climate (based on weather monitoring and some short-term forecasts) are available, information on specific risks for different sectors is also missing due to the lack of appropriate vulnerability analysis. The information provided by the current system is also not useful for sustainable land management and ecosystems. Moreover, the non-translation of climate information into formats that are easily understood by technical extension services (agriculture, forests, livestock, etc.), makes it of limited use.

#### **Cost of Component 1:**

Amount of co-financing mobilized for Component 1: US\$ 5,350,000

Requested GEF/LDC Funding: US\$ 1,400,000

*Refer to section IV for more details*

#### **Alternative**

In order to cope with the noted and forecasted harmful impacts of climate change, it is necessary to implement medium- and long-term strategies based on climate and meteorological information products and services in the project target areas. For this, it is imperative to install well functioning system for generating climate and meteorological information; and an efficient communications system for this information.

Consequently, it is necessary to: (i) on the one hand, renovate some meteorological stations and, on the other hand, set up new stations in the two project areas; (ii) implement an effective system to collect and transmit meteorological data; (iii) strengthen the capacities of monitors and producers of climate and meteorological data in order to provide producers, decision makers and local communities with localized meteorological information; (iv) implement an information system on climate services in the project area; (v) strengthen the capacities of various actors (final and intermediate users) on the understanding and use of climate and meteorological information; (vi) strengthen the capacities of local decision makers on the integration of climate information in the various development programs and projects; (vii) strengthen the capacities of local media outlets in order to provide better diffusion of climate information, especially community radio stations; and (viii) set up an early warning system to monitor and manage natural disasters due to weather or climate.

#### **Outputs & Activities**

***Output 1.1:*** *The climate, meteorological and hydrological network for the target areas and the capacities are strengthened in order to produce reliable data needed to monitor and analyze hydro-climatic phenomena*

***Activity 1.1.1:*** Participatory identification of climate-information needs of potential users and a diagnosis of the network of climate, meteorological, hydrological and hydrodynamic observations.

The implementation of the hydro-climatic information platform will first require conducting a diagnosis of the system to collect meteorological and hydrological data, and then, to assess the needs in climate information for targeted populations in the context of this project (local population, technical services, locally-elected officials, local administration, etc.). Thus, an evaluation study of the hydro-climatic data collection system and a needs assessment among the various actors (policy decision makers, technical organizations, local populations, etc.) for hydro-climatic information will be conducted in the five administrative regions. A consultant should conduct this study. The results will be shared with all final

users during a workshop to ensure they are consistent with the actual needs expressed in the field. Specific actions include:

- Mapping of the system for meteorological and hydrological data collection in Niayes and Casamance;
- Identification of local actors' specific needs in terms of agro-hydro-meteorological advice and climate information (ranging from seasonal forecasting to 10-day and daily forecasting);
- Sharing results of these two studies with local policy decision makers, institutional actors and final users.

#### Activity 1.1.2: Acquisition and installation of hydro meteorological instruments

This will involve rehabilitating and/or strengthening the network for meteorological and hydrological observations in the five-targeted administrative regions to better monitor changes in the climate and hydrology of the various waterways. Specifically, five automated meteorological stations (automatic collection and transmission via GPRS) will be installed in the regions of Louga, Thiès, Ziguinchor, Sédhiou and Kolda to collect data on temperature, rainfall, sunshine, wind, humidity, evaporation, etc. In addition, in each of these regions, the network of rainfall stations will be made denser. Therefore, 40 rainfall stations will be set up in each region. In an effort to monitor the impact of the swell on the mangrove, a marine station will be installed in Tobor for measuring wave height (swell) and conventional parameters. For this, ANACIM will be responsible for: (i) identifying sites to set up the different measuring points in accordance with WMO standards; (ii) participating in the selection process for meteorological equipment vendors; and (iii) installing all the equipment (automated meteorological stations, automated rainfall stations and the marine station). In addition, for monitoring in real time and forecasting of the various hydrological phenomena, four automated hydrological stations will be installed in the regions of Sédhiou, Kolda, Ziguinchor and Louga, in partnership with DGPRES. These stations will make it possible to measure the flow and height of various waterways. In close coordination with ANACIM, the DGPRES will be responsible for: (i) identifying the sites to set up the different hydrological stations; (ii) participating in the vendor selection process; and (iii) installing the equipment.

The management and use of hydro-climate data will require, on the one hand, implementing a database management system at ANACIM and DGPRES, and, on the other hand, a system to analyze these data. For this, two servers, three workstations (high-capacity computers), one climate model, one atmospheric model and one hydrological model will be procured. Specific actions include:

- Signing of protocols among DEFCCS, ANACIM and DGPRES;
- Identification of installation sites for measuring points by ANACIM and DGPRES;
- Development of technical specifications related to ANACIM and DGPRES; and
- Procurement and installation of equipment.

#### Activity 1.1.3: Training of technical staff (weather, hydro, agricultural, etc.) and producers on data collection, processing and analysis

Within the framework of implementing this information system, capacity-building training sessions for the management of equipment and use of data will be organized for staff from ANACIM, DGPRES and the Directorate of Agriculture (DA) as well as for producers. Thus, the following staff will be trained:

- Three meteorological forecasters on the forecasting models (meteorological and climate) to develop forecasts related to natural-disasters management and food security;
- Three hydrologists on the hydrological model that will be acquired for improved water-resources management in the target areas and especially for the development of warning products on flooding risks of the Casamance River;
- Two agro-meteorological technicians for the development of agro-meteorological information products for food security and resources management;
- Five monitors to collect meteorological data and manage different stations that will be upgraded; and
- Two maintenance technicians for the monitoring and management of meteorological equipment.
- In addition, training sessions for both the farmer-monitors and staff from the DA will be held on the collection, diffusion and interpretation of rainfall data in local languages.

Data collected at the meteorological and hydrological stations and at the rainfall stations will be analyzed by ANACIM and DGPRE, with support from DA, the Directorate of Livestock Breeding and other institutional actors, for the publication of agro-hydro-meteorological bulletins adapted to the needs of various users (producers and local decision makers). Specific actions include:

- Identification of actors (participants and trainers), training modules and training tools;
- Organization of at least one workshop on forecasting models for technicians from ANACIM and DGPRE;
- Organization of at least one workshop on meteorological data collection and equipment maintenance for technicians from ANACIM and DGPRE, DA and local producers;
- Organization of at least one workshop on agro-meteorological information products and the meteorological data interpretation for technicians from ANACIM and DGPRE, the Directorate of Agriculture, the Directorate of Livestock Breeding, media outlets and local producers; and
- Monitoring and evaluation of training.

***Output 1.2: An integrated information system producing climate information and generating the products needed to identify risks related to climate change (e.g., maps for risk, vulnerability, etc.) is developed to help identify efficient adaptation options and develop actors' capacities in adaptation***

***Activity 1.2.1:*** Implement a climate database (correlated with socio-economic and environmental data) and assessment tools to measure vulnerability due to climate change.

The management and use of hydro-climatic data will require the implementation of data management systems. For this, a management system for data collected from the various meteorological and hydrological stations will be implemented both at ANACIM and DGPRE. Transmission between the two databases will be done automatically using a GPRS network of one of the existing mobile telephone operators. This system will allow producers to have near real-time climatic information to better manage risks through an effective early warning system. This system will be combined with various socio-economic and environment data for the publication of a bulletin for each region with complete information on food security that will be disseminated to various users and shared with the National Council on Food Security (CNSA). Specific actions include:

- Signing of partnership protocols between ANACIM technical services, DGPRE and the technical services of Agriculture, Livestock Breeding and the mobile operator;
- Development and production of the database;
- Preparation of the model for the information bulletin that will be published regularly and shared within the framework of establishing the platform (see output 1.3).

***Activity 1.2.2:*** Using a participatory approach, analyze the sensitivity and exposure of targeted ecosystems (Niayes, mangrove, Kalounayes forest, etc.) as well as the means of subsistence in the face of climate change, both past and future (in 2030, 2050 or 2100) and estimate their impacts.

An evaluation study will be conducted in the context of this project to: measure the degree of vulnerability in the project targeted ecosystems as well as the means of subsistence for local communities in the face of harmful impacts of climate change already observed; and measure the expected risks due to warming predicted for the near (2030), medium (2050) and distant (2100) future. The goal of this study will be to estimate the observed and future impacts due to climate change in the various targeted ecosystems and on the people's livelihoods in the target areas. These time periods were selected by taking into account the time horizons included in the medium- and long-term planning documents for the national (Plan Sénégal Émergent, Sénégal Prospective 2035) and local level. Specific actions include:

- An assessment of ecosystem and socio-economic vulnerability in the Niayes and Casamance regions;
- An assessment of current and expected climate risks for the various productive sectors in the short-, medium- and long-term; and
- Sharing study results with local policy decision makers, institutional actors and final users.

***Activity 1.2.3:*** Identify the adaptation options for local communities and the resilience of ecosystems and analyze the cost-benefits of various options.

A study will be conducted with the following objectives: (i) identify the climate forecasting methods that have been endogenously developed by communities; (ii) identify the various adaptation options implemented by local communities in the face of observed climate change; and (iii) analyze the advantages and costs associated with these various adaptation strategies for each of this project's target regions, as well as the options for improvements in light of the opportunities offered by meteorological and climate forecasting. A consultant will conduct this activity.

***Output 1.3: A platform for sharing information is established to support the management of climate risks and long-term planning for adaptation.***

Activity 1.3.1: Identify the existing sharing platforms (e.g., GTP, Infoclim, Siena, etc.), and evaluate their effectiveness and sustainability and models for collaboration.

A study aimed at conducting an inventory of the various existing platforms on climate information in the various target regions across the country and at the sub-regional level will be conducted. This will involve identifying them; describing how they function and the roles of the various stakeholders; assessing their strengths and weaknesses, indicators of their sustainability; and the means for collaboration and sharing information that can be implemented. A consultant will conduct this study.

Activity 1.3.2: Establish a functional and sustainable system for sharing climate information and vulnerability assessments for local actors (local governments, technical services, producers and households).

This will involve improving and replicating the early warning system (EWS) model developed by ANACIM within the framework of the CCAFS program in Kaffrine. Each council will undertake:

- Identifying producers' needs in terms of climate information and advisory services, ranging from seasonal forecasting to 10-day and daily forecasting (see activity 1.1.1);
- Combining scientific and endogenous climate forecasting methods;
- Creating a regional platform in the form of a local Multi-disciplinary Working Group (GTP) whose mission is to provide ongoing monitoring of the meteorological/climate, hydrological and agricultural situation and to warn communities in time through the intermediary of the technical services of the agricultural and rural council present in all rural communities to avoid the disasters that rural households might face. This working group brings together the technical services in agriculture, plant protection, livestock breeding, meteorology, research and fishing; the administrative authority coordinates it. Each technical service, for its respective domain and in accordance with its mission, collects, analyzes and presents the current situation and 10-day prospects for its sector. In addition to the technical services, this working group will also include members who represent local media outlets and local NGOs. Thus, every 10 days, all GTP members will meet to evaluate the evolution of the growing season. Following each meeting, an information bulletin will be published and disseminated;
- Capacity building of producers, State actors, community radio announcers and NGOs on understanding climate forecasting, and especially their integration into their production system;
- Implementation of a test field to assess the added value of forecasting on production systems. Each year, demonstration fields will be installed to meet the extension needs for each site. Therefore, based on the seasonal pattern, inputs (seeds and fertilizer) and a mobile phone will be distributed in each site to target farmers (among those who will undertake the management of rain gauges and have at least a one-hectare plot);
- Collection of rainfall data to use for the evaluation and demonstration of forecasting (seasonal and intra-seasonal); and
- Evaluation of the communications system and the products included in the system

Activity 1.3.3: Create a network between the sharing system discussed in the project activity above with other existing information systems on food security and the environment.

Based on the results of the study on "Identification of existing sharing platforms – Activity 1.3.1" and to make the various implemented platforms more sustainable, these will be directly linked to the national GTP, CNSA, and CSE, which plays the same role with a broader vision in terms of information. At the sub-regional level, the existing platforms will be leveraged (AGHRYMET, ACMAD, RPCA, etc.). In addition, this system will serve as a technical arm for the various existing platforms in the various target

areas (e.g., COMRECC set up in the various regions). Therefore, representatives of these platforms will have access to the various training activities offered in the context of this system. Specific actions include:

- Implementation of an electronic platform for sharing information linked to the existing platforms at the national and sub-national level; and
- Organization of at least one sub-regional workshop for sharing, bringing together the existing platforms in CILSS space.

## **Component 2: Reducing climate change risks in target ecosystems and land with adaptive restoration measures**

**Outcome 2:** Adaptation options based on ecosystem management in the two target areas (Niayes and Casamance), including the adoption of ecosystem and land management practices resilient to climate change, reduce the risks caused by climate change in these areas.

### **Baseline for Component 2**

#### Co-financing projects

With a co-financing of US\$ 2 millions, the Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) is coordinating the “**Economic Development of Casamance Programme**” (PADEC) that operates in the regions of Kolda, Sédhiou and Ziguinchor for the enhancement of small farmer agricultural production in Casamance. This baseline is supporting the emergence of economic sectors with high added value. It targets domestic fruits (mango, banana etc.) and non-timber forest products (cashews, honey etc.). Through a structural approach for value chains, beneficiary producers draw their income from the production, processing and marketing of agricultural and non-timber forest products. The project also strengthens local capacities of extension services for greater supply of services to operators. This project should also include climate change aspects, particularly when supporting the implementation of agro-forestry plantations (plant materials used, adopted technology, etc.) for promising sectors (cashew, mango, etc.) to secure investments.

DEFCCS is also implementing agro-forestry development activities under the **Economic Development and Management Program of Niayes (PADEN)** in support of strengthening the capacities and skills of extension services and market garden producers. With a co-financing of US\$ 2 million, this baseline is enhancing entrepreneurship capacity of about 17,000 producers (women and men). The project provided farmers with access to agricultural inputs and land to grow onions, cabbages, tomatoes, potatoes, peppers and parsley. However, the project has not included adaptation of socio-economic activities to climate change. This climate change and variability aspect increasingly exposes people to instability and food insecurity due to their vulnerability to climate change and variability impacts on market garden crops (decreased rainfall, shallow draft and salinization of groundwater, sea spray and harmattan, unsuitable technical agricultural package, etc.).

#### Other relevant initiatives (non part to the co-financing)

DEFCCS is also implementing the Programme to promote rural electrification and a sustainable supply of domestic fuel (PERACOD-Ziguinchor and Kolda regions) to strengthen the technical and financial capacities of local communes and the forest service for large-scale implementation of a strategy aimed at ensuring sustainable provision of household fuel. With this investment, the management plan of Kalounayes forest is realized and forest inventories in the region of Kolda are on-going. Given the high pressures on forest resources in a context of climate change with negative forecasts for the rainfall regime in the area, key actions are needed to reinforce the natural stands, while taking into account the severe erosion of these plant genetic resources due to climate change and human pressure

Women’s groups are involved in mangrove restoration in Ziguinchor and Sédhiou with NGO support (Oceanium, Enfance et Paix) and from the forest service, but these activities are still modest compared to the size of the area. Given the extent of mangrove degradation, restoration efforts undertaken at the local level must be supported and strengthened, and climate information should be used to increase resilience to climate change.

Market gardening production is the main source of income and means of support in the local communities of the Niayes area, which provides nearly 60% of the national vegetable production. Despite the appropriateness of the implemented strategies and resources mobilized, including the climate change



aspect in current and future interventions is more than necessary, given the vulnerability of local communities who primarily depend on market garden crops.

### **Cost of Component 2:**

Amount of co-financing mobilized for Component 2: US\$ 4,000,000

Requested GEF/LDC Funding: US\$ 1,828,000

*Refer to section IV for more details*

### **Alternative**

The alternative is to promote proven agro-forestry technologies that are resilient to climate change to better protect market garden basins from silting up from sand dunes and also provide close protection for crops from winds (trade winds and harmattan) and heat. Faced with the downward trend in rainfall, special emphasis will be placed on saving water through the promotion of micro-irrigation. Support will be provided for research-development activities to adapt the technical agricultural package for horticulture and agro-forestry production systems to a changing biophysical context based on agro-meteorological and climate forecasts developed within the framework of this project.

As for the Niayes area, it will be necessary to fill the gap with respect to integrating the climate change and variability aspects in ongoing (baseline) projects and programs in the eco-geographic area of Casamance. The PRGTE interventions will include support to local communities in mangrove management and restoration in Casamance. In the forest, PERACOD achievements must be strengthened in Kalounayes and Kolda through the development and implementation of management plans in extensive forests inventoried in a climate change context. This will also involve including the climate information aspect in the agro-forestry projects and programs that are underway or planned for the next five years (e.g. PADEC) in Kolda, Sédhiou and Ziguinchor in addition to recommending adaptation strategies and solutions. The interventions will also involve promoting the development of palm and borassus groves around the agricultural areas, income generating activities (IGAs) for women, adapted agro-forestry and agro-pastoral practices, and the watershed approach for soil restoration, and water and soil conservation, all adapted to the new climate conditions.

### **Outputs and Activities**

***Output 2.1: At least 100 hectares of mangrove plantations are managed sustainably to restore this important ecosystem as a means of support (oyster farming, for example) and reduce the impact of swell and coastal erosion.***

***Activity 2.1.1: Regeneration/restoration of 100 ha of mangrove in Tobor (Ziguinchor) and Diendé (Sédhiou)***

In Tobor and Diendé, soil and water salinization due to decreased rainfall is accompanied by degradation of the mangrove ecosystem in the estuaries, which are replaced by acid sulphate soils that compromise the availability of fishery resources. To deal with this, a management plan integrating meteorological and climate forecasting will be developed based on a contract with a service provider under the supervision of the forest service. It will be followed by the regeneration/restoration of 100 ha of mangrove in partnership with the NGO Oceanium, on the Tobor site, based on a Memorandum of Understanding backed by a technical program under the supervision of the water and forest services. The same approach will be selected with the NGO Enfance et Paix in Diendé. Specific actions include:

- Development of mangrove restoration plan taking in account medium and long term climate changes;
- Memoranda of Understanding with the NGOs Oceanium and Enfance et Paix to undertake restoration activities;
- Regeneration/restoration of 100 ha of mangroves in Tobor and Diendé;
- Evaluation and adjustment of the application of the mangrove restoration plan and sharing experiences for potential scaling up.

Activity 2.1.2: Develop and apply techniques for sustainable farming of mangroves in the forest reserves of Ziguinchor and Sédhiou to prevent cutting and degradation of these forests.

This will involve supporting IGAs (oyster farming, fish farming, etc.) related to sustainable management of mangrove resources to support women's groups from villages located in the intervention areas of Tobor and Diendé. The IGAs will be rolled out in partnership with the National Aquaculture Agency (ANA) based on a Memorandum of Understanding under the supervision of the regional fishing service. Specific actions include:

- Participatory identification of IGAs, targeted Women's Advancement Groups (GPFs) and partnering mutual schemes;
- Supporting at least 20 women groups in implementing IGAs (oyster farming, fish farming, etc.)
- Socio economic and environmental assessment of the impacts of IGA in livelihood and the mangrove ecosystems
- Advisory and supervision by ANA and the regional fishing service.

***Output 2.2: Multi-purpose community forests resilient to climate change tested in the vegetable gardens of Niayes to protect crops from wind erosion and prevent encroachment by sand dunes.***

Activity 2.2.1: Identify the best-adapted forest species and suitable technologies for better protection of market garden basins from silting up as well as market gardening technology packages adapted to the biophysical context. The research-action will be realized on the most adapted forest species and the most effective agro-forestry technologies to protect market garden basins and plots. The specific activities are:

- Identify climate resilient forest species adapted to the Niayes area and effective agro-forestry technologies for the protection of basins and market garden plots;
- Update the technical sheets for market garden crops regarding climate changes impacts;
- Dissemination of research results

Activity 2.2.2: Planting of 110 ha of windbreaks around individual market garden basins to protect them from silting up and provide close protection of crop plots from the harmful impacts of winds (harmattan and trade winds).

Adapted agro-forest species will be planted to ensure close protection of market garden basins on vulnerable sites in the communes of Léona (35 ha), Kab Gaye (35 ha) and Mboro (40ha). The direct costs for planting are estimated at US\$ 600/ha. The forestry service will submit an annual work plan for the planting operations for each site. It will provide supervision of the work to be done with local communities organized into groups who are also in charge of surveillance and maintenance until completion. Specific actions include:

- Identification and mapping of market garden basins to be protected by site;
- Production of plants with adapted agro-forestry species;
- Planting windbreaks close to market garden basins and crop plots, totaling 35 ha in Léona, 35 ha in Kab Gaye and 40 ha in Mboro by the end of the project.
- Supervision and advisory support from the forest service to producers groups for the roll-out of activities: plant production, planting and plantation maintenance and surveillance;

Activity 2.2.3: Set up 60 ha of micro-irrigation systems to save water in pilot market gardens

The micro-irrigation devices will be installed by a service provider based on a contract for the provision of services under the technical supervision of the agricultural service. The agricultural service will be in charge of verifying the quality and technical certification of the work. The average cost is estimated at US\$ 1000/ha. Specific actions include:

- Participatory identification of pilot gardens;
- Realization of micro-irrigation in Léona (20 ha), Kab Gaye (20 ha) and Mboro (20 ha) and training producers on the use of systems.
- Advisory support and supervision from the agricultural services.
- Dissemination of results during regional fora for potential scaling-up.

***Output 2.3: At least 10 community groups, particularly women's groups, will be supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies.***

Activity 2.3.1: Reforest and apply natural regeneration techniques to 100 ha of palm grove with adapted varieties to reinforce the natural stands, while taking into account the severe erosion of these plant genetic resources due to climate change and human pressure.

Enrichment operations will be carried out in the valleys of Madina Findifé (Diendé CR in Sédhiou), Soukou (Saré Bidji CR in Kolda) in Tobor and Coubalan. Planting will be done based on an operation plan that will be executed under the supervision of the water and forest service. The plants produced or procured by the forest service will be provided to the planters at a rate of 100 plants/ha. Specific actions include:

- Participatory identification of palm grove sites in the targeted valleys;
- Identification and training of pilot/planter community groups;
- Participatory completion of enrichment operations in the targeted valleys at a rate of 100 plants/ha with a goal of 100 ha at the end.
- Advisory and supervision support from the forest service;

Activity 2.3.2: Support at least 10 women's groups in conducting income-generating activities (market gardening, poultry farming, small livestock husbandry, forest product marketing, salt production, etc.).

Support will be provided through microcredit. The diversification of production activities will enable local communities to reduce the risks of insecurity and to cope with the dangers of climate change and variability. Specific actions include:

- Participatory identification of target Women's Advancement Groups (GPFs) and IGAs to develop;
- Realization income-generating activities (market gardening, poultry farming, small livestock husbandry, forest product marketing, salt production, etc.);
- Partnership with existing microfinance services to support women in their IGA (establishment of saving system, credit lines, training on entrepreneurship)
- Develop protocol with the relevant technical services (DRDR, livestock, and fishing) to advice and supervise women groups.

Activity 2.3.3: Adoption of resilient agricultural technology packages (drought-resistant varieties, agro-forestry practices, etc.).

At least 200 producers will be supported to improve the resilience of the agricultural system in the Madina Findifé, Bakoum and Diendé valleys in Sédhiou and the Soukou (Saré Bidji) and Saré Oumar (Dioulacolon) valleys in Kolda. . Specific actions include:

- Participatory selection of producers and identification of needs;
- Organization of awareness raising sessions for producers on the use of improved seeds to enable producers' adhesion and adoption of the new technology;
- Organization and training of rural seed producers– At least 200 farmers, among them 50% women, in each site will be trained in seed production techniques. For each farmer, it will be provided seeds of drought-resilient crops to enable him to plant at least half a hectare of such crops
- Production of resilient seeds by 200 seed multipliers;
- Conservation & distribution of resilient seeds to at least 2000 producers
- Supervision and advisory by ISRA.

Activity 2.3.4. Restoration of 100 ha community forest in the Soukou valley watershed (Saré Bidji CR in Kolda) to protect riverbanks from soil erosion.

This will involve reforestation activities and the application of Soil Protection and Restoration / Soil and Water Conservation (SPR/SWC) measures to protect the watershed. A partnership agreement will be established between the project and the various decentralized technical services (DRDR, Water and Forests) to carry out the demonstration work in the Soukou valley. Specific actions include:

- Development of nurseries and production of local plant species. Women groups will be trained in nursery practices and production of local plant species;
- Reforestation of 100 ha community forest, carried out by the local population, in areas that have been classified as degraded;
- Realisation of banquettes (barriers) and half-moon (demi-lunes) and planting woody species to protect soil from splash erosion;
- Train communities in assisted natural regeneration techniques;
- Where necessary, local committees will be established to manage forest restored;
- Supervision and advisory by forest services

Activity 2.3.5: Combat bushfires in the Kalounayes forest to support regeneration effort of valuable forest species adapted to the biophysical context. A partnership agreement will be established with the forest service responsible for supervision of activities to benefit local communes and communities. Specific actions include:

- Identification of sites to treat and communities needs
- Acquisition of equipment and supplies to support 33 village committees to combat bush fires;
- Planting to enrich the forest with valuable forest species that are adapted to the biophysical context; and
- Advisory and supervision by forest services

### **Component 3: Support mechanisms for knowledge and information**

**Outcome 3:** Individual, household and community capacities will be strengthened in order to increase awareness about responses to climate change and effective support for adaptation efforts.

#### **Baseline for Component 3**

Several efforts are undertaken to strengthen capacity for extension services, producers and local deciders on participative and sustainable environmental governance. The Senegalese Government has made substantial efforts in improving the quality of extension services by expanding the knowledge base on natural resources and the environment, by the availability of information on the condition of natural resources and the environment, and strengthening operational, technical, and institutional capacities of the State and local communities to improve working conditions at the Ministry. In this framework, the Forest Training Center in Thiès is playing a central role in training or upgrading skills. Since 1991, the Centre has strengthened the technical and operational capacity of over 5230 staffs in the following areas: environment & natural resource management, wetlands management, coaching of women association on organisation and training local deciders on decentralization of resources natural (knowledge on policies). The competencies of the Forest training centers will be used to support development of local capacities on climate changes. The co-financing from the MEDD will be US\$ 0,5 million.

Training activities are also undertaken under projects implemented by DEFCCS in target regions. With PADEN, producers are improving their skills in planning and coordination of socio-economic development; and extension services on programme and project management. In addition, 9000 producers are trained on marketing and finance. With PADEC, about 150 stakeholders are trained on gender issues and 540 stakeholders trained in product marketing. However, the institutional and technical capacity to properly manage and protect natural resources against the negative impacts of climate change must be reinforced by a mechanism, in order to share and transfer information and knowledge more effectively. Co-financing from ongoing capacity building activities is US\$ 1 million. Despite the recognition of the critical role of local institutions in the management of natural resources, a systematic analysis has never been done to identify factors for successful performance to strengthen climate resilience and the support needed by these services to strengthen their role in facilitating adaptation to climate change.

Finally, the UNDP's baseline "*Programme on Coastal and marine resources Governance in the West African*" is developing capacities of communities and technical management of the coastal zone. With a co-financing of 1,5 millions, community organisations using mangrove ecosystems and marine protected areas managers are improving their technical competencies and also on the use of suitable technologies for the rehabilitation of coastal ecosystems.

### Alternatives:

The individual and collective capacities of the various stakeholders—local and departmental advisors, CBOs and ministry staff at the national and decentralized level—will be strengthened by increasing their access to information on climate change adaptation technologies. The individual and collective capacities will be strengthened through training programs in the following areas: (i) planning that supports commune and departmental advisors to better integrate climate change in local development plans with the goal of improved governance of land and ecosystems in a context of climate change; (ii) consideration of climate information when planning and programming activities of coordinating bodies, such as the COMNACC and COMRECC; (iii) integration of climate information into technology packages disseminated by the technical staff of ministries in charge of extension services; (iv) inclusion of climate change related issues in school curriculum to develop a genuine culture built on climate risk management; and (v) training and capacity building for CBOs for better use of information and adaptation technologies in their various socio-economic activities.

Results drawn from the project experience will be widely disseminated to help scale up the project outcomes to various local, regional and national levels using various strategies and mass communication tools, but also: systems for sensitization and awareness-raising, such as intra- and inter-community exchanges; community networks, such as school teachers and their students; institutional systems, including national and international meetings and seminars; and scientific and technical publications in particular.

#### **Cost of Component 3:**

Amount of co-financing mobilized for Component 3: US\$ 4,000,000

Requested GEF/LDC Funding: US\$ 675,000

*Refer to section IV for more details*

### **Outputs and activities**

#### ***Output 3.1: Local governments and decentralized technical services have the necessary capacities to support communities in implementing adaptation activities.***

Activity 3.1.1: Train community advisors (60 members) from eight municipalities on the integration of risks and opportunities related to climate change and options for adaptation.

This involves mainstreaming the issue of CC, which often manifests in negative events that have a considerable impact on socio-economic activities and the sustainable development of land and ecosystems in the local and departmental plans for the project intervention areas. The commune and departmental advisors and officials who set local policies and strategies will be trained in the areas of: (i) risk management and (ii) governance in land and ecosystem management in a context of CC. This involves ensuring greater consideration of risks related to CC and the adoption of suitable adaptation mechanisms, both in the formulation and implementation of local development plans. A training session over a two-year period will be provided in each commune and department by COMRECC technicians with support from two national consultants, who specialize in decentralization and climate change, respectively. The training will be given on site in each commune to reach all advisors. The local development plans (PLD) and regional plans for integrated development (PRDI), as well as tools developed by the TACC and INTACC on CC, along with materials developed by the project, will be included in the training materials.

Activity 3.1.2: Train 200 staff from the extension services of the ministries (of water resources, agriculture, environment, livestock, etc.) on the management of climate risks and on using results from climate risk assessments and vulnerability to adjust regulations, policies and plans that govern land and ecosystem management.

Staffs from technical services are responsible for advising communes and local communities in the management of local development. They will be trained both to upgrade their skills and in the management of climate risks as trainers to train commune and departmental advisors in applying CC knowledge in their respective technical areas. The categories of staff and the types of training are defined as follows:

- Technical staff from national extension services (MAER, MEDD, MEPA, fishing, water, etc.) will be trained on taking CC into account in project and program planning and the preparation of development plans and policies. (50 staff)
- Technical staff from devolved and decentralized services and NGOs will be trained on including climate risks in the management and planning of socio-economic activities. (50 staff)
- The capacities of members of coordination bodies at the national (COMNACC, GTP), regional (COMRECC, GTP, CRD & CDD and ARD) and local level will be strengthened in planning and coordinating activities related to climate risk management and the implementation of suitable adaptation options. (100 staff)
- Training will be provided by experts from the relevant technical ministries who will have been trained in advance by a national consultant specialized in CC. Specifically this will provide ongoing training, available on demand, through regular sessions and through cascade training from the national level to the regional and local level. Two training sessions will be held annually, based on the two in country seasons (dry and rainy).

The training will emphasize risk prevention, agro-sylvo-pastoral and fishing adaptation mechanisms and the standards and regulations for land and ecosystem management in a context of CC. The specific topics will include: (i) assessment tools for socio-economic and ecosystem vulnerability; (ii) awareness-raising methods for local communities and their advisors; (iii) production techniques using climate information integrated into technical packages and technologies for each type of production; (iv) methods for climate risk prevention and management; (v) tools to monitor the application of extended technologies and to measure their performance and adaptability; and (vi) methods for scaling-up and replication of project results.

Activity 3.1.3: Train members of 100 CBOs, including 50 women's organizations, to use climate information and adaptation technologies in their socio-economic activities.

Producers' organizations (farmers, herders, foresters, fishermen, women oyster farmers, rice growers, market gardening producers, etc.) are very active in production and ecosystem conservation. They will improve their performances through training on the use of climate information and adaptation technologies. The main topics will deal with: (i) identification of the impacts of climate on the various means of production; (ii) defining needs for climate information; and (iii) adaptation technologies for various means of production and land and ecosystem conservation.

The training will focus on practical issues by integrating traditional technologies with modern methods for forecasting and climate risk management. This is to develop the interest of local communities to technological innovations related to CC, which remains an area that is still most unknown to even technicians, and more so to local communities. The gender and youth approach will be given priority to ensure equal access for young men and women who are most disadvantaged in terms of access to technical information and production inputs, but are yet the best candidates for innovation and most vulnerable to CC.

Two training sessions will be held in each commune at the start and end of the cultivation cycle to ensure that the main stages for crop production and land management are fully taken into account. They will be provided by staff from the advisory organizations (government extension services, and NGOs) who will have already received the necessary training. The training sessions will be conducted with support of a national consultant.

***Output 3.2: The benefits from implemented adaptation solutions are monitored and shared with government officials, target communities and partners to inform them about project results replication opportunities.***

Activity 3.2.1: Capitalize on project achievements and experiences and develop relevant strategies and communication materials adapted to local communities.

The communities' use of climate information and adaptation technologies developed by the project is subject to the development of strategies and adapted communication tools. Effective communication strategies (institutional, social and educational) will be developed and integrate following subcomponents:

- Institutional communication will be based on existing or soon-to-be-created institutional sharing mechanisms between extension services, based primarily on various frameworks for dialogue and

action (COMNACC, COMRECC, Harmonization Conference, CRD, CDD, CLD, etc.); (ii) the project's institutional system (Project Steering Committee, Project Implementation Unit etc.); (iii) partners (co-financing partners, in particular); and (iv) the monitoring and evaluation system to support regular sharing between the various institutional stakeholders. It will use various tools such as written correspondence, regular meetings and workshops, technical and scientific reports, telephone calls, emails, etc.

- Educational communication will emphasize environmental education geared towards local communities aimed at behavior change based on greater understanding of risks related to CC and the most suitable adaptation strategies.
- Social communication will emphasize broad diffusion of climate information thru mass Medias, traditional mechanisms of information diffusion at the village-community, inter-village and commune levels. Such a system will capitalize on local knowledge and know-how by highlighting and disseminating traditional knowledge and best practices.

Various communication tools and media will build on one another to support one- and two-way transmission of climate information through: (i) the national network of Community Radio Stations relayed through local radio stations; (ii) a show entitled "Environment - Climate Change and Food Security" sponsored by organizations working in environmental and natural resources management; (iii) an agro-hydro-meteorological bulletin will be published at least every 10 days; (iv) a hotline will be set up in partnership with telecommunications operators to promote the transmission of meteorological information; (v) a project Web site will be set up to facilitate dissemination of information; (vi) opinion leaders and resource persons will be sensitized and mobilized to support the dissemination of climate information and to develop best practices for adaptation; (vii) mass communications methods such as radio, television, newspapers and internet will be used; (viii) traditional communication channels will be used: places of worship, markets, traditional communicators, palaver tree, storytelling, etc.; and (ix) toolkits (audiovisual, pictures, etc.). Communications tools will also include materials, such as posters, films, slide shows, theater, village bulletins, maps, text messages, etc. To do this, service provision protocols will be signed with various stakeholders, such as communication organizations.

Activity 3.2.2: Share project experiences with communities by organizing exchange visits or intra- or inter-community forums; information shows on radio and local, regional and national television; and through sensitization and information sessions.

To promote the scaling-up of the project's positive experiences at the local, regional and national level, local communities in the project intervention area will help extend the approach and results with project support into other communities; from one village to another in the same commune (intra-community) and from one commune to another (inter-community).

To do this, departmental and regional umbrella organizations that often focus on several communes will be mobilized to act as intermediaries between the project areas and other areas, thereby facilitating the rapid replication of project results. Thus each year, based on the forthcoming results and at the opportune time, an intra-community visit for experience sharing will be organized in each commune, followed by forums at the intra- and inter-community level to better demonstrate and disseminate the results. In addition, in order to scale up from the local to the regional, and even national, level, mass diffusion methods will be used, such as: (i) community-based radio stations with a monthly or bi-weekly show on the project activities and results; (ii) spots and an annual televised documentary; and (iii) traditional systems for sharing information (word of mouth, palaver trees, weekly market, pilot farmers, etc).

Activity 3.2.3: Produce 1000 school manuals on climate risk management and training for teachers and other school personnel to support the integration of CC in the school curriculum and build a culture of CC resilience.

Public primary schools will be chosen as pilot test sites to disseminate information and best practices in climate risk management aimed at households. Selection of these schools is based on the fact that the teachers in rural settings often assert genuine intellectual leadership that they also transmit through students, especially those in the fourth and fifth grades who in turn serve as intermediary educators in their families. Climate change will be included in the school curriculum through development and diffusion by the project, in accordance with the Ministry of National Education, of: (i) 100 guides for inspectors; (ii) 200 teaching manuals for teachers; (iii) 700 school exercise books. Two schools located far

from each other will be chosen in each commune, both to receive the training and to put it into practice in the school gardens and woods that already exist in some locations and which could serve as demonstration and extension sites.

Activity 3.2.4: Make project results visible during regional and international meetings and through written reports and technical and scientific publications.

The products produced and the impacts generated by the project activities will be disseminated during regular meetings of the project bodies, notably the PSC, but also during meetings held at the coordination structures at various national (COMNACC, GTP, etc.), regional (CRD, COMRECC, GTP local, etc.) and local (CLD) levels. Also, regional and international seminars will provide an opportunity for sharing lessons learned from the project with other countries in the sub-region and worldwide in the context of the country's contribution to CC management on a global scale.

The two experts in charge of monitoring and evaluation will have primary responsibility for this activity. They will receive support from a national consultant specialized in communications. They will be assisted in their activities by other actors involved in project implementation, namely: (i) commune advisors who will be able to disseminate project results among colleagues in areas not covered by the project; and (ii) staff from extension services responsible for disseminating technical innovations to local communities.

## **II.5. Project indicators, risks and assumptions**

The proposed project indicator framework follows the GEF-5 Adaptation Monitoring and Assessment Tool (AMAT) and is aligned with the UNDP M&E Framework for Adaptation. Objective level indicators and outcome level indicators are specified according to the UNDP nomenclature of Results Based Management (RBM). The project design further foresees the development of more specific M&E tools, especially at the local implementation level. Participatory local level M&E can be a powerful management and communication tool, especially for tracking and demonstrating project results in demonstration sites. It is foreseen that a more detailed M&E project framework will be developed during the project inception phase for national management purposes.

An overall project M&E plan has been devised and is included in the respective section of the project document below. It foresees regular progress reports, as well as audits, a mid-term evaluation and an end-of-project evaluation.

Assumptions underlying the project design include that:

- Reform of the decentralization policy, with Act 3, will make it possible to maintain and even strengthen the institutional, socio-economic and financial authority of rural communes, which are the gateways to the project interventions;
- Effective cooperation of local government and administrative officials and those from technical services at various levels (regional, departmental and communal) will develop for the inclusion of activities and lessons learned from the project in the planning and sustainable development of these various levels;
- A sufficient number of producers will volunteer to test and diffuse the adaptation practices on their land and will work according to the project strategy;
- Replication of effective adaptation solutions will be done at various levels (particularly on project sites and areas) through a system that integrates lessons learned into the formulation and revision of policies and programs/projects; and
- The necessary adaptation capacities will be developed during project implementation to ensure the sustainability of activities after the end of the project.

A complete Risk Log is included in **Annex 1** of the project document. It includes risks identified in the project identification form (PIF) (see below) as well as newly identified risks. Additional barriers are included in the Barrier section above and are generally represented by the risks specified below. Most risks are organizational or strategic in nature, and mainly relate to relatively low current institutional and individual capacities of the public service structure in terms of adaptation. In summary, the following key



risks were identified (risks identified in the PIF or the Project Preparation Grant phases are identified accordingly):

- Problems with the coordination of administrative and extension services and the limited management and monitoring capacities in the technical services limits the quality of implementation;
- Financial resources are limited for local communities and their institutions;
- The lack of human and material resources could limit the implementation of some planned activities (PIF);
- The impacts of climate change are more intense than forecasted;
- Political will does not remain constant throughout the project's entire duration;
- Social conflicts disrupt project activities, particularly gender and age issues. For example, regarding gender issues: women's access to land is quite limited; some activities such as rice growing in the Casamance are seen as women's activities, thus presenting as many barriers as potential opportunities for the project. In terms of issues related to age, young people are more open to changes, including the adoption of new technologies and practices, a central issue for this project, while the oldest people continue to be the main decision makers and have actual control over resources (including land and the natural resources); and
- Insecurity in some places in the Casamance that could disrupt project activities in this area.

## **II.6. Cost-Effectiveness**

The project objective is to create an enabling environment for the implementation of adaptation solutions based on ecosystem management in the Niayes and Casamance regions with major consideration placed on maximizing the project's cost-efficiency ratio. This consideration will consist of leading activities on the geographic themes and areas where their added value is substantial, or even crucial. Thus, the proposed components, outputs, activities and approaches have been identified and selected so the project objectives and expected impacts can be achieved based on a cost-efficiency approach.

As indicated above, this project document meets the immediate and urgent adaptation priorities identified in the NAPA for Senegal. These priorities were measured based on their cost-efficiency and their sustainability, before the project components had been identified and developed. This project aims to achieve results that will be a first in the target areas through three components commensurate with the project's resources. These components and their expected results reinforce each other. Hence, Component 1 will consist of providing climate information and relevant tools for managing climate risks to communal authorities, technical services and communities to promote practices for sustainable land use and ecosystems resilient to CC (Component 2) and to bring all this to scale through Component 3 on knowledge sharing and management.

Improving resilience to the impacts of climate change for the ecosystems of the Niayes and Casamance regions as well as communities from these regions who are among Senegal's and the world's most vulnerable is an undertaking with incalculable benefits, justifying by far the modest envisaged costs. With or without this project, local populations will have to develop more resilient options and economies for their survival. In effect, this is less about improving living conditions than safeguarding life, and even survival, which is priceless.

In the context of the project areas, developing socio-economic activities in alternative and more lucrative activities in the traditional sectors of agriculture, livestock breeding and forestry that are becoming increasingly unstable due in large part to CC. However, the vast majority (over 90%) of people in the project areas still depend on these types of activities and are facing food insecurity and various other manifestations of poverty that are becoming chronic for an increasingly substantial proportion of people. Increasing the resilience of agricultural and livestock practices is therefore crucial to improving the resilience of communities themselves. Promoting alternative economic activities with a view to increase people's incomes through IGAs would be a way to increase their resilience.

As indicated in the various studies conducted in the country, including the NAPA, and worldwide, Senegal as a whole (economic sectors, geographic areas taken together) and as an LCD is severely threatened by the impacts of CC. Thus, to strengthen resilience to the impacts of climate change, it is tempting to cover the entire country and therefore only scratch the surface. Instead, it was decided to only implement the project in two of the six eco-geographic areas of Senegal and on a limited number of communes, and by emphasizing the demonstration sites and sharing of successful experiences outside the sites and project areas. The idea is to reach a critical sample of people (by region and by type of production) who will adopt and extend community-based adaptation solutions that have been previously tested in demonstration projects.

Adapting to the impacts of climate change requires relevant climate information. This project will implement an effective system for climate data collection, analysis and extension to rural communities, technical services and local decision makers. A large part of the costs associated with this component will help finance meteorological equipment and strengthen ANACIM capacities and its existing network, all while ensuring a good cost-efficiency ratio for these investments. A possible, though not viable, alternative for the country could be to only use climate forecasts from the WMO or other international organizations. However, these organizations (i) can only work if the data are provided by a large number of countries worldwide, and (ii) generally do not provide forecasting on the local level and cannot do it without available data. Therefore, strengthening the climate data collection and processing system that the project will support will benefit all of Senegal, the sub-region and the rest of the world because these data can be entered into climate information systems on a national, regional and global levels. The type of expected results for Components 1 and 3 of the project is a prerequisite for: (i) conducting forecasting at the local, national and sub-regional levels; and (ii) sharing data with international organizations that in turn will help improve their climate forecasts and scenarios throughout the world.

Through the second component, this initiative will support the implementation of technologies and agro-sylvo-pastoral and IGA practices that will be resilient to climate threats that are becoming more frequent and intense. These local investments will be made through Component-2 activities. These activities have been identified through a literature review and field visits during the project design stage through a participatory approach involving the various stakeholders (local communities and their locally-elected officials; decentralized government advisory services, CBOs and NGOs active in the project areas; and administrative and policy officials at the commune, departmental and regional levels.

## **II.7. Sustainability and replicability**

In terms of innovation, the project will support local stakeholders (actors) to implement consistent monitoring and an information and data system to strengthen decision making for ecosystem management. This will be developed to facilitate the process to disseminate climate and environment information to interested actors within the project areas where information is currently limited. Innovation has also been integrated into the project's solution-based approach. The project will take into account gender concerns because the issue of degradation of natural resources and natural disasters (drought, salinity) affects men and women and vulnerable groups (children, young people and seniors) differently.

The fact that this project reflects priorities of local populations was confirmed during the project formulation phase. It has strong support from the people, the Senegalese Government and development partners both at the central and local levels. Through the implementation of adaptation initiatives at the community level, the project aims to ensure that local communities have effective ownership of the adaptation solutions and, thus, sustainability and replication of the promoted solutions.

Another guarantee of project sustainability and replicability is its anchoring in the Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) of the Ministry of Environment and Sustainable Development (MEDD), as well as the involvement of several branches of the State at various levels including ANACIM, which will be crucial, particularly for Components 1 and 3 of the project and the Ministries of Agriculture, Livestock, Water, etc.

Activities for Component 3, designed especially for the scaling-up of project experiences, will be used to ensure sustainability and replicability of project activities and results. Therefore, through the various communication and dissemination methods to share project experiences, including visits between the different communities for sharing, planned in Component 3, it is envisaged that the promoted adaptation solutions will be replicated in other communities. This component will help the project results to influence

local and regional policies, strategies, plans and programs in the target areas, especially ensuring intervention sustainability and replicability.

The various planned capacity building activities will also help ensure the sustainability of project activities but will also multiply the effects and replicate the results achieved by other stakeholders.

By maintaining an ongoing institutional partnership with other development partners, this project seeks to leverage other funding sources for adaptation in Senegal.

Lastly, lessons learned from this project will be compiled and disseminated to a broad range of stakeholders. The project will also make frequent contributions to the adaptation learning mechanism (ALM) to ensure that lessons learned will benefit other stakeholders within the entire portfolio of LDCF projects, in particular, and of the GEF as a whole.

## II.8. Stakeholder involvement Plan

The success of project intervention requires the active involvement and participation of the different stakeholders. Key stakeholders for the project include (i) national institutions involved in environmental monitoring and climate information (e.g. ANA, ANACIM, DEFCCS, CSE, DEEC, DGPRE, etc.); (ii) Regional and Local authorities and technical staffs from Louga, Thiès, Ziguinchor, Kolda, Sédhiou and target villages leaders; (iii) community based organisations (women and young associations) that are living in the targeted rural areas, including the participation of potentially vulnerable groups such as women; (iv) and NGO supporting communities on their activities (e.g. OCEANIUM, Action pour la Paix). The present Plan was designed based on the series of meetings organised with stakeholders during the project inception, for agreeing on project content and operationalization (situation analysis, priority sites for intervention, priority criteria, and management arrangements).

Outputs	Responsible institution and role	Stakeholders and role
<u>Output 1.1:</u> The climate, meteorological and hydrological network for the target areas and the capacities are strengthened in order to produce reliable data needed to monitor and analyse hydro-climatic phenomena	ANACIM & DGPRE: identification of needs, procurement and installation of hydro-Meteo stations, and organise training of staffs on the use of material and tools	Local leaders, technical staffs, target communities organisation: contribution to the identification of climate /hydro information needs
<u>Output 1.2:</u> Develop an integrated information system producing climate information and generating the products needed to identify risks related to climate change (e.g., maps for risk, vulnerability, etc.)	ANACIM& CSE: development of the database	DGPRE, DEFCCS, MEED, etc.: contribution to establish socio-economic & environmental database;  Target communities: participation in analysing socio-economic and ecosystem sensitivity to CC & identifying adaptation options
<u>Output 1.3:</u> A platform for sharing information is established to support the management of climate risks and long-term planning for adaptation.	ANACIM: establishment of the sharing platform	CSE, DGPRE, DEEC, DEFCCS, COMNACC: contribution in identifying relevant existing sharing system/participation in the designing and operationalization of the sharing information platform;  Local government: mobilisation of communities  Communities: participation in the sharing information platform.

Outputs	Responsible institution and role	Stakeholders and role
<p><u>Output 2.1:</u> At least 100 hectares of mangrove plantations are managed sustainably to restore this important ecosystem as a means of support (oyster farming, for example) and reduce the impact of swell and coastal erosion</p>	<p>ANA &amp; DEFCCS: Advisory and supervision</p>	<p>NGO Oceanium and Enfance et Paix: conduct restoration activities;</p> <p>Local government: mobilisation of communities</p> <p>Target communities (women organizations): participation in restoration and IGA's activities;</p>
<p><u>Output 2.2:</u> Multi-purpose community forests resilient to climate change tested in the vegetable gardens of Niayes to protect crops from wind erosion and prevent encroachment by sand dunes</p>	<p>ISRA: Conduct research on best-adapted forest species and suitable technologies for market gardens</p> <p>DEFCCS: Advisory and supervision reforestation activities</p> <p>Local Agriculture Services: Advisory and supervision on micro-irrigation activities</p>	<p>Local government: mobilisation of communities</p> <p>Target communities (farmers): participation in reforestation &amp; micro-irrigation activities</p>
<p><u>Output 2.3:</u> At least 10 community groups, particularly women's groups, will be supported in Casamance to improve climate resilience through agro-pastoral and agro-forestry activities and sustainable water management practices in rice paddies</p>	<p>DEFCCS: Advisory and supervision reforestation activities</p> <p>Extension services: Advisory and supervision women IGA activities</p>	<p>Local government: mobilisation of communities</p> <p>Microfinance services: supporting women in their IGA (establishment of saving system, credit lines, training on entrepreneurship);</p> <p>Women organization: involved in identifying and undertaking IGA, and establishing plant nursery;</p> <p>Farmers organization: involved in farming systems (beneficiaries)</p> <p>Other communities: involved in reforestation activities and bushfire combat.</p>
<p><u>Output 3.1:</u> Local governments and decentralized technical services have the necessary capacities to support communities in implementing adaptation activities</p>	<p>ANACIM &amp; COMNACC: development of training packages</p>	<p>Staffs from municipalities, extension services &amp; community organisations: identification of training needs, participation to training sessions</p>
<p><u>Output 3.2:</u> The benefits from implemented adaptation solutions are monitored and shared with government officials, target communities and partners to inform them about project results replication opportunities.</p>	<p>Ministry of Environment: management of project communication component</p>	<p>Ministry of Education (regional inspections &amp; schools in target sites): contribute to the development of school booklets on climate changes</p> <p>Target communities: involved in projects communication (regional forums, exchanges visits, etc.)</p>

## II.9. Compliance with UNDP Environmental and Social Safeguards

From an environmental and social safeguard point of view, the project is rated as a Category Low, with small scale, site-specific and manageable environmental and social impacts. No adverse long-term impacts are anticipated. Risks of potential exclusion of women from project activities. Social positive impacts are expected with the implementation of profitable income-generating activities. The anticipated negative environmental impacts of the project would result mainly from activities associated with the restoration of mangrove ecosystem, establishment of windbreaks around individual market garden, and reforestation activities. The project will undertake reforestation of 100 ha in the Soukou valley watershed. Anticipated positive impacts are expected with the reduction of erosion and the restoration of biodiversity.

## III. MANAGEMENT ARRANGEMENTS

The project will be implemented in accordance with UNDP procedures and modalities "National Implementation Modality - NIM". The Directorate of Water, Forests, Hunting and Soil Conservation (DEFCCS) of the Ministry of the Environment and Sustainable Development (MEDD) will be the executing entity. To this end, DEFCCS will work very closely with the various technical departments including those in charge of national meteorology, agriculture, livestock, water, fisheries, economics and finance, scientific research, communication, women, and decentralization, and through decentralized administrative authorities (governors, prefects, and technical offices), for the implementation of activities at the local level.

The institutional framework of the project is established as follows based on a stakeholders' analysis:

- A **Project Steering Committee (PSC)** will be established and will be responsible for making management decisions for a project in particular when guidance is required by the Project Manager. The Minister of the Environment and Sustainable Development or his delegate will chair the PSC. The competent authority will pass a decree establishing the PSC before project start. This PSC will include representatives from the Ministry of Economy and Finance, UNDP, relevant technical ministries and representatives of all other stakeholders. The Committee may appoint where necessary, person and / or institution with skills deemed useful for the successful implementation of the project. The steering committee will meet at least once a year and its composition will be established by a ministerial order. The Project Imp Unit will provide the secretariat of the PSC.

The PSC plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Project Board can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans. In order to ensure UNDP's ultimate accountability for the project results, Project Board decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP Project Manager

- A **Project Implementation Unit (PIU)** based in Dakar will be responsible for implementing the project in its entirety. The PIU will be responsible to provide daily technical, administrative and financial management of the project. It will establish and coordinate collaboration with the implementing entity, DEFCCS, and other technical departments involved in project implementation. It will be responsible for the production of all documents and reports related to the project (financial and progress reports, work plan and budgets, research reports, etc.). It shall serve as the secretariat for the PSC. The PIU will be comprised of a Project Manager (PM), an administrative and financial officer (AFO), two experts in monitoring and evaluation, an executive assistant, and three drivers. One of the experts in monitoring and evaluation, based within the PIU, will cover the Niayes (Thiès and Louga) while the second expert will be assigned to the Casamance and will be based in this

project area to cover the regions of Ziguinchor, Sédhiou and Kolda. (See Appendix 2 for the terms of reference of the staff of the PCU). The project staff will be recruited by a Tripartite Committee made of representatives from UNDP, the ministry of finance, and the ministry of environment, through a competitive process.

- **Project Regional Committees (RC):** will be responsible for consultation and coordination at the regional level to ensure proper implementation of the project in accordance to the regional context, including coordination with other active projects. This committee is chaired by the Governor and shall include representatives of relevant administrative authorities and local leaders and technical services, as well as members of COMRECC and the Regional GTP. This latter consideration is in keeping with the fact that the COMRECC is a mechanism for inter-ministerial coordination to develop more synergy in the management of issues related to climate change. The installation of the Regional Committees on Climate Change (an offshoot of COMNACC created by Decree No. ° 2011-1689 of October 3, 2011 / Article 11) is effective in the 14 administrative regions of Senegal. The RCs will serve as local steering committees in their respective regions. Finally, the IREF and the head of the regional division for environment and classified enterprises (DREEC) will jointly provide the secretarial services for the RC.

#### IV. MONITORING AND EVALUATION

The project will be monitored through the following M& E activities. The M& E budget is provided in the table below. The M&E framework set out in the Project Results Framework in Part III of this project document is aligned with the AMAT and UNDP M&E frameworks.

##### **Project start:**

A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

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

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff Vis à Vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the LDCF related AMAT set out in the Project Results Framework in Section III of this project document; finalize the first annual work plan; review and agree on the indicators, targets and their means of verification; and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. Agree on and schedule an M&E work plan and budget.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

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

##### **Quarterly:**

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the

basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

#### **Annually:**

- Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and SOF (e.g. GEF) reporting requirements.
  - The APR/PIR includes, but is not limited to, reporting on the following:
  - Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
  - Project outputs delivered per project outcome (annual).
  - Lesson learned/good practice.
  - AWP and other expenditure reports
  - Risk and adaptive management
  - ATLAS QPR
  - Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.
  - Describe M&E framework for specific outputs that are based on RCT principles, including who is to be involved, budget, survey instrument etc.

#### **Periodic Monitoring through site visits:**

UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members no less than one month after the visit.

#### **Mid-term of project cycle:**

The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (expected to be in October 2015). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the **UNDP Evaluation Office Evaluation Resource Center (ERC)**. The LDCF/SCCF AMAT as set out in the Project Results Framework in Section III of this project document will also be completed during the mid-term evaluation cycle.

#### **End of Project:**

An independent Final Terminal Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and SOF (e.g. GEF) guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

The Final Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the **UNDP Evaluation Office Evaluation Resource Center (ERC)**. The relevant SOF (e.g. GEF) Focal Area Tracking Tools will also be completed during the final evaluation.

**Learning and knowledge sharing:**

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

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

**Communications and visibility requirements:**

Full compliance is required with UNDP’s Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects need to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: [http://www.thegef.org/gef/GEF\\_logo](http://www.thegef.org/gef/GEF_logo). The UNDP logo can be accessed at <http://intra.undp.org/coa/branding.shtml>.

Full compliance is also required with the GEF’s Communication and Visibility Guidelines (the “GEF Guidelines”). The GEF Guidelines can be accessed at: [http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08\\_Branding\\_the\\_GEF%20final\\_0.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf). Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

**Table 4: M& E work plan and budget**

Type of M&E activity	Responsible Parties	Budget USD <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	Project Manager (PIU) Project Director (CNEDD) UNDP CO, UNDP GEF	Indicative cost: 10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. PIU, esp. M&E expert	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on <i>output and implementation</i>	Oversight by Project Manager, PIU, esp. M&E expert Implementation teams	To be determined as part of the Annual Work Plan's preparation.  Indicative cost is 25,000	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	Project manager (PIU) UNDP CO UNDP RTA UNDP EEG	None	Annually



Type of M&E activity	Responsible Parties	Budget USD <i>Excluding project team staff time</i>	Time frame
Periodic status/ progress reports	Project manager and team	None	Quarterly
Mid-term Review	Project manager (PIU) UNDP CO UNDP RCU External Consultants (i.e. evaluation team)	Indicative cost: 30,000	At the mid-point of project implementation.
Terminal Evaluation	Project manager (PIU) UNDP CO UNDP RCU External Consultants (i.e. evaluation team)	Indicative cost: 45,000	At least three months before the end of project implementation
Audit	UNDP CO Project manager (PIU)	Indicative cost per year: 3,000 (12,000 total)	Yearly
Visits to field sites	UNDP CO UNDP RCU (as appropriate) Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO, as required by UNDP RCU
<b>TOTAL indicative COST</b> Excluding project team staff time and UNDP staff and travel expenses		USD 122,000 (+/- 3.2% of total LDCF budget)	

## V. Legal Context

- This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

- a. Put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b. Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

- **Audit Clause**

Audit will be conducted according to UNDP Financial Regulations and Rules and applicable Audit policies.

## VI. Project Results Framework

<p><b>The project will contribute to reaching the Country Program Results as defined in the UNDP and UNDAF Country Program:</b></p> <p><b>UNDAF 2012-2016 Outcome(s):</b></p> <p>Outcome 1: "By 2016, farmers in targeted areas increase their income by using new knowledge, technologies, and investments with high added value."</p> <p>Outcome 7: "By 2016, efforts to adapt to climate change facilitate adequate access of people affected to basic social services and the development of sustainable livelihoods."</p>
<p><b>Expected outputs of the Country Programme Action Plan (CPAP) 2014-2018:</b></p> <p>Output 1: "Resilient climate change policies formulated and access to financial mechanisms enhanced "</p> <p>Output 2: "Pilot sites developed and resilient to climate change"</p>
<p><b>UNDP Strategic Plan 2014-2017 Outputs</b></p> <p>Output 1.4. Scale up action on climate change adaptation and mitigation across sectors which is funded and implemented</p>
<p><b>Pertinent GEF Strategic Objectives:</b></p> <p><u>Objective 1:</u> Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate change</p> <p><u>Objective 2:</u> Strengthen institutional and technical capacities for effective climate change adaptation</p>
<p><b>Pertinent GEF Expected Outcomes:</b></p> <p><b><u>Outcome 1.1:</u></b> Vulnerability of physical assets and natural systems reduced</p> <p><b><u>Outcome 1.2:</u></b> Livelihoods and sources of income of vulnerable populations diversified</p> <p><b><u>Outcome 1.3:</u></b> Climate-resilient technologies and practices adopted and scaled up</p> <p><b><u>Outcome 2.1:</u></b> Increased awareness of climate change impacts, vulnerability and adaptation</p> <p><b><u>Outcome 2.3:</u></b> Access to improved climate information and early-warning systems enhanced at regional, national, sub-national and local levels</p> <p><b><u>Outcome 2.4:</u></b> Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures</p>
<p><b>Relevant GEF Outcome Indicators (Following the AMAT tool):</b></p> <p><b><u>Indicator 2:</u></b> Type and extent (and value, where applicable) of assets strengthened and/or better managed to withstand the effects of climate change (measured e.g. in ha of cropland/ rangeland/ catchments; km of coastline)</p> <p><b><u>Indicator 3:</u></b> Number of people benefiting from the adoption of diversified, climate-resilient livelihood options (percentage of whom are female)</p> <p><b><u>Indicator 4:</u></b> Extent of adoption of climate-resilient technology/ practice (measured in number of users [percentage of whom are female]; or geographical area)</p> <p><b><u>Indicator 5:</u></b> Number of people (percentage of whom are female) with increased awareness of climate change impacts, vulnerability and adaptation</p> <p><b><u>Indicator 7:</u></b> Number of people (percentage of whom are female)/ geographical area with access to improved climate information services</p> <p><b><u>Indicator 9:</u></b> (a) Number of people (percentage of whom are female) trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures</p>

Objectives/Outcomes	Indicator	Baseline	Target for End of Project	Means of Verification	Risks and Hypotheses
<p><b>Project Objective:</b> To strengthen the enabling environment for the implementation of appropriate adaptation measures based on ecosystem management in Niayes and Casamance Regions</p>	<p><b>Indicator 1</b> Number of people affected by the impacts of climate changes that adopted climate resilient technologies/practices (disaggregated by gender) (AMAT indicator 4)</p>	<p>The production in eco-geographical areas of Niayes and Casamance are seriously threatened by the impacts of climate change, include: water shortage, land degradation, salinization, siltation of valleys linked to soil erosion in highlands, and degradation of habitats among the most productive and sensitive such as mangroves and coastal areas. It is estimated that 168,555 people in target sites are affected. Significant efforts have been made to address environmental issues and natural resources management with the implementation of various international agreements including the Rio Conventions. However, due to the population's low income levels and limited access to climate resilient technologies, farmers and households have limited capacity to adapt to climate change: this include new technologies to make agro-sylvo-pastoral activities more resilient; and diversification of activities for better risk management.</p>	<p>At least 3500 people from Dakar, Louga, Thiès, Ziguinchor, Sédhiou and Kolda (50% women) covered by risks management measures such as resilient ecosystem and land management practices (e.g. mangrove/forest restoration); resilient agro-pastoral and agro-forestry activities and sustainable water management</p>	<p>Survey and M&amp;E Reports</p> <ul style="list-style-type: none"> <li>•</li> </ul>	<p><u>Assumption</u></p> <ul style="list-style-type: none"> <li>➤ Existence of scientific and technical capacities to support the development of risks management measures;</li> <li>➤ Participation and commitment of target communities</li> </ul> <p><u>Risks</u></p> <ul style="list-style-type: none"> <li>➤ Political instability and conflict resurgence in Casamance;</li> <li>➤ Existence of unresolved land disputes</li> <li>➤ Low capacity and involvement of national institutions to support communities in their adaptation activities</li> <li>➤ Impacts of climate change far greater than predicted</li> </ul>

<p><b>Outcome 1:</b> Information management systems to determine and monitor the impacts of climate change on ecosystems are implemented for effective forecasting, preparation and decision-making</p>	<p><b>Indicator 2:</b> Number of people (50% female) in Niayes and Casamance regions with access to improved climate information (AMAT indicator 7)</p>	<p>With limited coverage on meteorological network, communities have limited access to climate information. Moreover, the non-translation of existing climate information into formats that are easily understood by technical extension services (agriculture, forests, livestock, etc.), ecosystems managers and producers, makes it of limited use.</p>	<p>At least 3000 people (50%) women will access to relevant climate information through the sharing platform established to provide ongoing monitoring of the meteorological/climate, hydrological and agricultural situation and to warn communities in time.</p>	<p>Activity and M&amp;E Reports Survey</p> <ul style="list-style-type: none"> <li>•</li> </ul>	<p><u>Assumption</u></p> <ul style="list-style-type: none"> <li>➤ Availability of relevant information to support information &amp; awareness process</li> </ul> <p><u>Risks</u></p> <ul style="list-style-type: none"> <li>➤ Low mobilisation and lack of interest of target groups</li> </ul>
<p><b>Outcome 2:</b> Adaptation options based on ecosystem management in the two target areas (Niayes and Casamance), including the adoption of ecosystem and land management practices resilient to climate change, reduce the risks caused by climate change in these areas.</p>	<p><b>Indicator 3:</b> Ha of natural system better managed to withstand the effects of climate change (AMAT indicator 2)</p>	<p>At present, natural resource management is advanced largely through the improvement of productivity, capacity building of producers or ecosystem management/land &amp; forest restoration. What is lacking, under conditions of climate change, is climate adaptive interventions to address climate-driven factors such as securing mangrove from the impacts of storm surges, coastal erosion; protecting Niayes from wind erosion and the advancing of dunes, etc. This, in turn, will help local communities and producers to ensure continued availability and access to natural resources that support livelihoods and reduce their vulnerability to shocks and ultimately to adapt to changing conditions.</p>	<ul style="list-style-type: none"> <li>➤ 100 ha of mangrove restored to reduce the impacts of storm surges, and coastal erosion;</li> <li>➤ 110 ha of windbreaks planted in the Niayes vegetable gardens to protect production from wind erosion and prevent the encroachment of sand dunes;</li> <li>➤ 100 ha reforestation in the Soukou valley to protect the watershed from erosion</li> </ul>	<p>Activity and M&amp;E Reports Survey</p>	<p><u>Assumptions</u></p> <ul style="list-style-type: none"> <li>➤ Involvement of communities</li> </ul> <p><u>Risks</u></p> <ul style="list-style-type: none"> <li>➤ Low capacity and involvement of national institutions to support communities in their adaptation activities</li> </ul>

	<p><b>Indicator 4:</b> Number of people benefiting from the adoption of diversified, climate-resilient livelihood options (percentage of whom are female) (AMAT indicator 3)</p>	<p>Due to the population's low income levels and limited access to credit, farmers and households do not have the financial resources to make required investments to adapt to climate change. This situation is particularly difficult for women facing to multiple socio-economic problems, including: (i) unfair access to production resources including land, training, funding, etc.; and (ii) an unfavorable distribution of roles and responsibilities between men and women in the production and social life.</p>	<p>At least 30 community groups (1500 people approx. among them 80% women) supported in Casamance to undertake agro-pastoral, agro-forestry activities and sustainable water management practices in rice paddies</p>	<p>Activity and M&amp;E Reports Survey</p>	
<p><b>Outcome 3:</b> Individual, household and community capacities will be strengthened in order to increase awareness about responses to climate change and effective support for adaptation efforts.</p>	<p><b>Indicator 5</b> Type and number of people with increased awareness of climate change impacts, vulnerabilities and adaptation (gender disaggregated) (AMAT indicator 5)</p>	<p>Even with the existing sources of weather data, the national meteorological Agency has insufficient information to effectively predict the impacts of weather patterns leading to low capacity of managers and households to effectively management natural resources and biodiversity in ignorance of fundamental climate-ecosystem dynamics.</p> <p>Adaptation solutions need to be framed by a basic understanding of how climate interacts with ecosystems and species – the Eco physiological, evolutionary, and ecological processes and responses that determine ecological system productivity and resilience; along with the productivity and resilience of the dependent social systems.</p>	<p>At least 200 staffs from local technical services, 1000 people from CBO's, among them 50% women, and 100 teachers have relevant knowledge on climate risks to better response to climate changes and to provide effective support for adaptation efforts.</p>	<p>Activity and M&amp;E Reports Survey</p>	<p><u>Assumption</u></p> <ul style="list-style-type: none"> <li>➤ Availability of relevant physical and socio-economic data allowing the assessment of key vulnerability and cost effectiveness adaptation options</li> </ul> <p><u>Risks</u> Low capacity and involvement of national institutions to support development of knowledge products</p>

## VII. Total Budget and Work Plan

<b>Award ID:</b>	00087092	<b>Project ID(s):</b>	00094237
<b>Award Title:</b>	PIMS 4964		
<b>Business Unit:</b>	SEN10		
<b>Project Title</b>	Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions- Republic of Senegal (PRGTE)		
<b>PIMS no.</b>	PIMS 4964		
<b>Executing Agency</b>	Directorate of Water, Forests, Hunting and Soil Conservation		

GEF Outcome/Atlas Activity	Responsible Party/	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Amount year 1 (USD)	Amount year 2 (USD)	Amount year 3 (USD)	Amount year 4 (USD)	Amount year 5 (USD)	Total	Budget Note
	Implementing Agent											
Component 1: Information platform on climate change and socio-environmental aspects to identify vulnerabilities caused by climate change and propose effective adaptation options in the Niayes and Casamance regions	Directorate of Water, Forests, Hunting and Soil Conservation	62160	GEF/LDCF	71300	Local Consultants	30,000	30,000	30,000			90,000	a
				71400	Contractual Services - Individual	32,800	32,800	32,800	32,800	32,800	164,000	b
				71600	Travel	28,000	28,000	28,000	28,000	28,000	140,000	c
				72200	Equipment and furniture	100,000	100,000	100,000	100,000	100,000	500,000	d
				72600	Grants	34,000	34,000	34,000	34,000	34,000	170,000	e
				74200	Audio Visual & Print Prod Costs	16,000	16,000	16,000	16,000	16,000	80,000	f
				75700	Training, Workshop and Conf.	50,000	50,000	50,000	50,000	50,000	250,000	g
				74500	Miscellaneous	2,000	1,000	1,000	1,000	1,000	6,000	h

GEF Outcome/Atlas Activity	Responsible Party/	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Amount year 1 (USD)	Amount year 2 (USD)	Amount year 3 (USD)	Amount year 4 (USD)	Amount year 5 (USD)	Total	Budget Note
	Implementing Agent											
				Expenses								
<b>Total Budget Component 1</b>						<b>292,800</b>	<b>291,800</b>	<b>291,800</b>	<b>261,800</b>	<b>261,800</b>	<b>1,400,000</b>	
Component 2: Reducing climate change risks in target ecosystems and land with adaptive restoration measures	Directorate of Water, Forests, Hunting and Soil Conservation	62160	GEF/LDCF	71300	Local Consultants				6750	6750	13,500	i
				71400	Contractual Services - Individual	32,800	32,800	32,800	32,800	32,800	164,000	j
				71600	Travel	23,400	23,400	23,400	23,400	23,400	117,000	k
				72200	Equipment and furniture	159,600	159,600	159,600	159,600	159,600	798,000	l
				72600	Grants	100,000	100,000	100,000	100,000	100,000	500,000	m
				74200	Audio Visual & Print Prod Costs	16,000	16,000	16,000	16,000	16,000	80,000	n
				75700	Training, Workshop and Conf.	30,100	30,100	30,100	30,100	30,100	150,500	o
				74500	Miscellaneous Expenses	1,000	1,000	1,000	1,000	1,000	5,000	p
				<b>Total Budget Component 2</b>						<b>362,900</b>	<b>362,900</b>	<b>362,900</b>
Support mechanisms for knowledge and information	Directorate of Water, Forests, Hunting and Soil Conservation	62160	GEF/LDCF	71400	Contractual Services - Individual	32,800	32,800	32,800	32,800	32,800	164,000	q
				71600	Travel	20,000	20,000	20,000	20,000	20,000	100,000	r
				72200	Equipment and furniture	7,000	7,000	7,000	7,000	7,000	35,000	s
				72600	Grants	28,400	28,400	28,400	28,400	28,400	142,000	t
				74200	Audio Visual & Print Prod Costs	20,000	20,000	20,000	20,000	20,000	100,000	u
				75700	Training, Workshop and Conf.	26,000	26,000	26,000	26,000	26,000	130,000	v
				74500	Miscellaneous Expenses	1,500	500	500	500	1,000	4,000	w



GEF Outcome/Atlas Activity	Responsible Party/	Fund ID	Donor Name	Atlas Budgetary Account Code	Atlas Budget Description	Amount year 1 (USD)	Amount year 2 (USD)	Amount year 3 (USD)	Amount year 4 (USD)	Amount year 5 (USD)	Total	Budget Note
	Implementing Agent											
<b>Total Budget Component 3</b>						<b>135,700</b>	<b>134,700</b>	<b>134,700</b>	<b>134,700</b>	<b>135,200</b>	<b>675,000</b>	
<b>Subtotal components</b>						<b>798,800</b>	<b>796,800</b>	<b>796,800</b>	<b>773,550</b>	<b>774,050</b>	<b>3,903,000</b>	
<b>Project management</b>	<b>Directorate of Water, Forests, Hunting and Soil Conservation</b>	<b>62160</b>	<b>GEF/LDCF</b>	71200	International Consultants			7500		7500	<b>15,000</b>	<b>x</b>
				71400	Contractual Services - Individual	36000	36000	36000	36000	36000	<b>180,000</b>	<b>y</b>
				74500	Miscellaneous Expenses	500	250	250	500	500	<b>2,000</b>	<b>z</b>
	<b>Total project management</b>						<b>36,500</b>	<b>36,250</b>	<b>43,750</b>	<b>36,500</b>	<b>44,000</b>	<b>197,000</b>
<b>TOTAL PROJET</b>						<b>835,300</b>	<b>833,050</b>	<b>840,550</b>	<b>810,050</b>	<b>818,050</b>	<b>4,100,000</b>	

Budget Note	Description
a	NC socio-economists (2) to analyse sensitivity of livelihood and contribute to the development of database NC environmentalists (2) to analyse sensitivity of Niayes ecosystem and contribute to the development of database; NC forest experts (2) to analyse sensitivity of forest and contribute to the development of database; NC climate vulnerability experts (2) to analyse climate changes impacts and contribute to the development of database
b	Salary for 1 Admin Finance, 2 M&E experts, 1 Secretary and 3 drivers
c	DSA for 8 national consultants and steering committee members Travel PMU staffs (supervision missions) Travel Steering committee meeting (supervision missions) Car rent for transport consultants
d	Procurement & installation of 5 meteorological stations, 04 hydrological stations, 01 marine station, 200 rainfall gauges Telecommunications infrastructure including computers, computer servers and software, radiotelephones, portable telephones, GSM/GPRS/GSM/GPRS modems and other equipment for internet access Rehabilitation of stations including stabilizing power supply with solar panels, batteries and inverters and upgrading weather fences; Procurement of 5 climatic models; PMU equipment (6 laptop, 4 All-in-One Printer/ photocopier/scanner/fax; 3 LCD projector and screen; 7 mobile phones and 10 GPS Cameras, 3 office equipment (table, chairs, etc.), 2 cars for M&E +3 Office maintenance
e	Agreement with ANACIM for the development of integration climate information platform including identification of needs, procurement/installation of stations, development of database and sharing platform Agreement with DGPRE for the development of integration information platform including identification of needs, procurement/installation of stations, development of database and sharing platform Agreement with Centre de Suivi Ecologique for the development of database and sharing platform Universities & research centers to support project research and capitalisation
f	Printing of training tools and scientific materials Communication material/publication (national & international)
g	15 local workshops for the identification of climate-information needs 10 training workshops of technical staff and producers on data collection, processing and analysis 26 local workshops on climate changes impacts assessment and adaptation options 50 meeting of local Multi-disciplinary Working Group (GTP) 10 trainings of GTP on the use and dissemination of climate information National and Regional steering committee meetings Project inception workshop
h	Contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials.

Budget Note	Description
i	Socio economist, environmentalist and forest experts
j	Salary for 1 Admin Finance, 2 M&E experts, 1 Secretary and 3 drivers
k	DSA for 3 national experts and steering comity members Travel PMU staffs (supervision missions) Travel Steering comity meeting (supervision missions) Car rent for transport consultants
l	Regeneration/restoration of 100 ha of mangroves in Tobor and Diendé Planting 66 ha of windbreaks close to market garden basins and crop plots Realization of 60 ha micro-irrigation Reforestation of 100 ha of palm grove Production of resilient seeds by 200 seed multipliers Conservation & distribution of resilient seeds to at least 2000 producers Reforestation of 100 ha community forest Realisation of banquettes (barriers) and half-moon (demi-lunes) and planting woody species to protect soil from splash erosion Equipment and supplies to support 33 village committees to combat bush fires Planting 100 ha in Kalounayes forest PMU equipment (6 laptop, 4 All-in-One Printer/ photocopier/scanner/fax; 3 LCD projector and screen; 7 mobile phones and 10 GPS Cameras, 3 office equipment (table, chairs, etc.), 2 cars for M&E +3 Office maintenance
m	Grant for 20 women groups undertaking oyster farming, fish farming, etc. Grant for 10 women groups undertaking market gardening, poultry farming, small livestock husbandry, forest product marketing, salt production, etc. Agreement with: <ul style="list-style-type: none"> <li>• NGOs Oceanium and Enfance et Paix to undertake restoration activities</li> <li>• ANA and the regional fishing service to supervise women groups engaged into implementing IGAs (oyster farming, fish farming, etc.)</li> <li>• ISRA to identify the best-adapted forest species and suitable technologies for market gardens and resilient agriculture system</li> <li>• Forest services in the 3 target regions to supervise communities' forest restoration activities</li> <li>• DRDR supervise farmers and women groups on their IGA and agriculture activities</li> <li>• Universities &amp; research centers to support project research and capitalisation</li> </ul>
n	Printing of training tools and scientific materials Communication material/publication (national & international)
o	10 training on resilient seed production 4 trainings on the use of micro-irrigation systems 10 trainings on plant nursering 10 training on bushfire

<b>Budget Note</b>	<b>Description</b>
	National and Regional steering committee meetings Project final workshop
<b>p</b>	Contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials.
<b>q</b>	Salary for 1 Admin Finance, 2 M&E experts, 1 Secretary and 3 drivers
<b>r</b>	DSA International for MPU staff (2) attending workshops International travel for PMU staffs (2) attending workshops Travel PMU staffs (supervision missions) Travel Steering comity meeting (supervision missions)
<b>s</b>	PMU equipment (6 laptop, 4 All-in-One Printer/ photocopier/scanner/fax; 3 LCD projector and screen; 7 mobile phones and 10 GPS Cameras, 3 office equipment (table, chairs, etc.), 2 cars for M&E +3 Office maintenance
<b>t</b>	Agreement with: National and regional COMNACC to support training on climate changes Regional education inspection to develop school manuals on climate risk management Ministry of Environment to implement communication activities
<b>u</b>	Printing of training tools and school manual Communication material/publication (national & international)
<b>v</b>	08 training for municipalities on climate risks 10 training for technical staffs on climate risks management 20 training for CBO on the use of climate information and adaptation technologies 10 regional forums to share project results National and Regional steering committee meetings
<b>w</b>	Contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials.
<b>x</b>	IC Mid Term & Final Evaluation
<b>y</b>	National Coordinator
<b>z</b>	Contingencies related to inflation, currency exchange fluctuations and other external shocks and contingencies, which would increase the cost of travel and materials.

[Summary of Funds \[1\]](#)

<b>Co-financing</b>	<b>Amount USD \$</b>
<b>Grant</b>	
GEF – UNDP	4,100,000
<b>Co-financing</b>	
Ministry of Environment and Sustainable Development (Parallel Cofinancing)	7,000,000
Ministry of Environment and Sustainable Development (in cash)	800,000
Ministry of Environment and Sustainable Development (in Kind)	200,000
Agence National de l'Aviation Civile et de la Meteorologie (Parallel Cofinancing)	3,500,000
UNDP CO Senegal	500,000
UNDP CO Senegal (Parallel Cofinancing)	2,000,000
<b>Total</b>	<b>18,100,000</b>

<sup>[1]</sup> Summary table should include all financing of all kinds: GEF financing, cofinancing, cash, in-kind, etc...

## VIII- Annexes

### Annex 1: Risk Log

<b>Project Title:</b> Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions- Republic of Senegal	Award ID:	Date: February 2015
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#	Description	Date Identified	Type	Impact & Probability (1-5)	Mitigation / Management response	Owner
1	Low commitment and capacity of governing/technical institutions at different levels notably local (commune) to develop practices and mainstream climate change adaptation	PIF	Organizational and operational	I=3 P=3	The project will build the capacity of relevant governing/technical entities, and communities at different levels to raise awareness about climate change, and the need to develop plans and practices to adapt to these changes.	Governmental entities, and partners at regional, and communal level
2	Social and political conflicts (e.g. land management, gender ...etc.). This includes security related issues due to the ongoing conflict in parts of the Casamance.	PIF	Social, Political	I=3 P=3	The project will fully involve elected leaders of the communes, and different stakeholders at the local level. This will help prevent and manage conflicts of different types. The Board of the commune in charge of affairs within the commune will be used in the decision making related to project activities in their areas including issues such as land management, gender and youth involvement.	Local stakeholders, namely local leaders and communities.
3	Heavy administrative procedures slow down project implementation	June 2014	Organizational and operational	I=3 P=3	The project will use a formalized and systematized partnership approach through the signing of written agreements that spell out clearly the roles and responsibilities with a description of actions to be taken by who, when, where, and with what means and approach. Wherever possible and appropriate partnership with most decentralized institutions (communes, CBOs, NGOs, local extension services) will be favored.	Governmental entities (MEDD...etc.) UNDP
4	Limited financial and technical capacity of project stakeholders including local communities and their institutions, and extension services	June 2014	Financial, technical, and organizational	I=3 P=3	The project is designed to build needed capacities of project stakeholders for its successful implementation (see description of project activities for more information on the type of support that will be provided).	Project stakeholders at different levels (government, local communities, extension services)
5	Occurrence of extreme climate events far greater than ever experienced and anticipated.	PIF	Environmental	I=4 P=2	Extreme climate events can significantly impact project activities. The project will develop mitigations measures and strengthen	DEFCCS, UNDP, project partners and

#	Description	Date Identified	Type	Impact & Probability (1-5)	Mitigation / Management response	Owner
					communication on potential climate risks based on improved climate information (appropriate adaptation technologies, etc.)	stakeholders
6	Political reforms and changes in personnel at different levels.	June 2014	Political	I=4 P=3	The project is designed with an adaptive management approach to allow taking into account major political changes that may have negative impacts on its achievements. With regard to the change of personnel, the project will mitigate potential impacts by establishing formal partnerships with institutions and not individuals. In addition, capacity-building activities, such as training, will target several individuals (instead of one) to ensure that in the event of personnel change there will be some remaining persons for continuous involvement project activities.	DEFCCS, UNDP, project partners and stakeholders
7	Villagers do not see the benefit of new practices or social pressures hinder adoption of new practices	June 2014	Strategic	I=4 P=2	The project has been designed with a participative approach that involved wide consultations with all project stakeholders at different levels and on numerous occasions. This approach was selected, even though it is time consuming and expensive, to ensure a maximum buy in from project stakeholders. In addition, the project is designed to use a similar approach during its implementation to put project beneficiaries in the driving seat as much as possible.	Stakeholders
8	Risks of potential exclusion of women from project activities. Social positive impacts are expected with the implementation of profitable income-generating activities.	June 2014	Social	I = 2 P = 2	Gender mainstreaming, stakeholder engagement and participatory approaches to designing activities aim to avoid adverse impacts on gender equality	DEFCCS, UNDP, project partners and stakeholders
9	The anticipated negative environmental impacts of the project would result mainly from activities associated with the restoration of mangrove ecosystem, establishment of windbreaks around individual market garden, and reforestation activities.	June 2014	Environmental	I = 2 P = 2	During the project inception phase, DEFCCS will develop an Environmental and Social Management Framework (ESMF) that will provide guidance and measures with clear roles and responsibilities, along with capacity strengthening measures for effective implementation and monitoring.	DEFCCS, UNDP, project partners and stakeholders

## **Annex 2: Key Assessment reports**

### ***Meteorology (PPG Report 1)***

- General climate
- Rainfall evolution from 1950 to 2010
- Climate trends in Niayes ecoregion
- Climate trends in Casamance ecoregion
- Socio-economic and environmental impacts of climate change observed in the project area;
- Projected temperature and rainfall
- Adaptation strategies
- Analysis of barriers
- Projects outputs and activities

### ***Socio-economy (PPG Report 4)***

- Political & institutional context
- Threats and causes of problems
- Barriers
- Analysis of stakeholders
- Intervention areas
- Project strategy
- Project outputs and activities

### ***Forestry (PPG Report 5)***

- Country presentation
- Political, environmental and socio economy of target zones
- Adaptation policy and strategy at national level
- On-going projects and programmes in project target sites
- Climate changes impacts
- Barriers
- Project intervention sites
- Project outputs and activities

## **Annexe 3: Social and Environmental Screening**

(See Doc attached)

## **Annexe 4: Terms of Reference for Project Personnel**

The Project Implementation Unit is responsible for day-to-day implementation and management. It is notably responsible for technical support to all activities, and establishing technical working relationships with a range of projects and programmes and activities throughout the 10 communes

Tasks

- Preparing Annual and Quarterly work plans;
- Preparing Financial and progress report;
- Preparing TOR for all activities, inputs and services;
- Overseeing the identification, selection and supervision of all service providers;



- Providing technical support to the implementation of climate-resilient activities at the community level. This includes regular visits to communities' areas to observe and advise on all local activities;
- Providing technical support and direct inputs to all capacity development activities at local, municipal and provincial levels. This includes the design and implementation of training programmes;
- Prepare policy papers, recommendation, as appropriate and necessary;
- Ensuring coordination with all related projects in the sector and related sector;
- Arrange and ensure the smooth implementation of all PB meetings;
- In-between PB meetings, ensure the PB members are informed of all major developments and reports on a regular basis as specified by the PB (note: this should take place at least twice a year other than planned PB meetings);
- Building working technical partnerships;
- Overseeing lesson learning and lesson dissemination;
- Providing training in line with work plans and budget;
- Implement the M&E plan;
- Oversee communications: website, newsletters, leaflets, etc.;
- Ensure that appropriate accounting records are kept, and financial procedures for NIM are followed;
- Facilitates and cooperates with audit processes at all times as required;

#### *Staffing*

The PIU will consist of one National Project Manager (PM), one M&E experts, one Finance and Administration Manager, one Secretary, and two drivers. National and international consultants will support the PM: National expert micro-dam, borehole, micro-irrigation system, Environmental Impacts Assessment (EIA). The project will also develop MOU with extension services and relevant NGO & Producers Federation to support resilient communities' activities. Finally, UNDP will hire 3 UNVs to support management of project in select Region. The Detailed TOR for each of these will be prepared prior to the Inception Workshop, approved by the PB and by UNDP/GEF.

#### ***National Project Manager***

Reports to: Project Board

Timing/Duration: This is a full-time position for the five years of the project.

Objective/scope:

This is a high-level policy/leadership position to oversee the project implementation.

- The initial objective is to establish the PIU and oversee the recruitment of its staff and its operationalization.
- The next objective is to ensure regular work planning, adaptive management and monitoring of project progress towards project objectives and goals, and management of all PIU staff.
- The third objective is to ensure the PIU interacts functionally with all partners, national and international, at high levels. This includes developing joint objectives and activities with international partners and other projects.

He/she will be a locally recruited national selected based on an open competitive process. He/she will be responsible for the overall management of the project, including the mobilization of all project inputs and the supervision of project staff, consultants and sub-contractors. He/she will report all substantive and administrative issues to the MEE deputy minister. The PM will report to the Project Board (PB) on a periodic

basis and will be responsible for meeting the project's government obligations under the national implementing modality (NIM). He/she will act as a liaison between the Government and the liaison officer that will be nominated in the DEFCCS, UNDP and other UN Agencies, NGOs and project partners, and will maintain close collaboration between the project and other co-financing donor agencies.

Tasks (these include, but are not limited to):

#### PIU Management and Planning

1. Assume operational management of the project in consistency with the project document and UNDP policies and procedures for nationally executed projects;
2. Oversee preparation and updates of the project work plan as required; and formally submits updates to UNDP and reports on work plan progress to the PB and UNDP as requested but at least quarterly;
3. Oversee the mobilization of project inputs under the responsibility of the Executing Agency;
4. Oversee the recruitment of all consultants and sub-contractors;
5. Ensures that appropriate accounting records are kept, and financial procedures for NIM are followed, and facilitates and cooperates with audit processes at all times as required;
6. Ensures all reports are prepared in a timely manner;
7. Assist in the finalization of TORs and the identification and selection of national consultants to undertake the rapid assessment;
8. Assists in the planning and design of all project activities, through the quarterly planning process and the preparations of TOR and Activity Descriptions;
9. Supervises the project staff and consultants assigned to project;
10. Throughout the project, when necessary, provides advice and guidance to the national consultants, to the international experts and to project partners;
11. Assist in the dissemination of project findings, notably to relevant governmental departments and internationally.

#### Partnerships

1. Oversee development and implementation of communication strategy;
2. Oversee development and implementation of the M&E monitoring system;
3. Build working relationships with national and international partners in this sector;
4. Ensure the coordination of project activities work with related work of partners;

#### Qualifications

The PM will have nationally renowned expertise in at least one of the following fields: Environmental, Disaster Risks Management, or rural economics; Natural resources management, and, climate change forecasting and impact forecasting. In addition, the following qualifications will be key to the project success:

- Appropriate University Degree in natural resources management, economics or agriculture;
- Substantial experience and familiarity with the ministries and agencies in Burundi;
- Verified excellent project management, team leadership, and facilitation;
- Ability to coordinate a large, multidisciplinary team of experts and consultants;
- Fluency in English;
- Knowledge in English is an asset.

### ***Supported staff***

The M&E Expert will be national expert. He/she will:

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

The Finance and Admin Manager will be a national expert. He/she will:

- Set up and maintain project files;
- Collect project related information data;
- Update plans;
- Administer PB and other relevant meetings;
- Administer project revision control;
- Establish document control procedures;
- Compile, copy and distribute all project reports;
- Responsible for the financial management tasks under the responsibility of the PM;
- Provide support in the use of Atlas for monitoring and reporting;
- Review technical reports;
- Monitor technical activities carried out by responsible parties.

### **Annexe 5: Special Clauses**

The schedule of payments and UNDP bank account details.

The value of the payment, if made in a currency other than United States dollars, shall be determined by applying the United Nations operational rate of exchange in effect on the date of payment. Should there be a change in the United Nations operational rate of exchange prior to the full utilization by the UNDP of the payment, the value of the balance of funds still held at that time will be adjusted accordingly. If, in such a case, a loss in the value of the balance of funds is recorded, UNDP shall inform the Government with a view to determining whether the Government could provide any further financing. Should such further financing not be available, the assistance to be provided to the project may be reduced, suspended or terminated by UNDP.

The above schedule of payments takes into account the requirement that the payments shall be made in advance of the implementation of planned activities. It may be amended to be consistent with the progress of project delivery.

UNDP shall receive and administer the payment in accordance with the regulations, rules and directives of UNDP.

All financial accounts and statements shall be expressed in United States dollars.

If unforeseen increases in expenditures or commitments are expected or realized (whether owing to inflationary factors, fluctuation in exchange rates or unforeseen contingencies), UNDP shall submit to the government on a timely basis a supplementary estimate showing the further financing that will be necessary. The Government shall use its best endeavours to obtain the additional funds required.

If the payments referred above are not received in accordance with the payment schedule, or if the additional financing required in accordance with paragraph above is not forthcoming from the Government or other sources, the assistance to be provided to the project under this Agreement may be reduced, suspended or terminated by UNDP.

Any interest income attributable to the contribution shall be credited to UNDP Project Account and shall be utilized in accordance with established UNDP procedures.

Ownership of equipment, supplies and other properties financed from the contribution shall vest in UNDP. Matters relating to the transfer of ownership by UNDP shall be determined in accordance with the relevant policies and procedures of UNDP.

The contribution shall be subject exclusively to the internal and external-auditing procedures provided for in the financial regulations, rules and directives of UNDP.

## Annexe 6: Co-financing Letters

  
REPUBLICQUE DU SENEGAL / 18  
Un Peuple - Un But - Une Foi

N° 00416  
N°..... MEDD/DEFCCS/PRGTE

Dakar, le 18 FEB 2015

**MINISTRE DE L'ENVIRONNEMENT  
ET DU DEVELOPPEMENT DURABLE**  
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*Le Ministre*

**Objet:** Lettre de cofinancement au projet « *Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions- Republic of Senegal (PRGTE)* »

**Madame la Représentante-résidente du PNUD,**

Le Gouvernement du Sénégal a le plaisir d'appuyer et d'endosser le projet cité en objet et qui apporte une réponse aux défis du changement climatique. En effet, le projet proposé va adresser les priorités du Programme d'Action National pour l'Adaptation aux Changements Climatiques (PANA) identifiées dans les zones des Niayes et de la Casamance. Les actions proposées se focalisent sur la protection des dunes, la restauration des mangroves, l'agroforesterie, la gestion de l'eau, la sensibilisation et l'éducation.

Le Ministère de l'Environnement et du Développement Durable (MEDD) confirme l'engagement du gouvernement du Sénégal dans la participation au cofinancement du projet susmentionné à travers :

**A**  
**Madame Fatou Binetou DJIGO**  
**Représentante-résidente du PNUD**  
**Coordonnatrice du Système des Nations-Unies**  
**Dakar, Sénégal.**

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Ministère de l'Environnement et du Développement Durable - route des fronts de terre - angle Père Maristes  
Tel: (221) 33 859.13.42 - Fax: (221) 33 822.21.80 - BP 4055 - DAKAR

- un **cofinancement en parallèle d'US \$ 7 millions USD** correspondant :

- aux projets en cours mis en oeuvre par la Direction des Eaux, Forêts, Chasses et de la Conservation des Sols (DEFCCS). Ainsi, le Programme d'Aménagement et de Développement Économique des Niayes (PADEN) appuie le développement horticole et agro forestier par le renforcement des capacités et compétences des structures d'appui et des producteurs maraichers pour la création de richesses au profit des communautés locales. Le Programme d'Appui au Développement Économique de la Casamance (PADEC) intervient dans les régions de Kolda, Sédhiou et Ziguinchor par la mise en valeur du potentiel agricole et agroalimentaire de la Casamance naturelle à travers les petits producteurs par l'appui aux filières émergentes à forte valeur ajoutée;
  - aux activités du Centre de Suivi-Ecologique (CSE) concernant le monitoring de l'environnement et des ressources naturelles notamment : (i) le suivi des écosystèmes agro – sylvo – pastoraux, (ii) le suivi des changements climatiques et leur impact sur la dégradation des terres et des écosystèmes, (iii) la gestion des risques climatiques, (iv) l'évaluation environnementale, etc. Le CSE est susceptible d'apporter une contribution significative pour le suivi des applications de l'information climatique et de son impact sur les écosystèmes ;
  - aux activités du Centre de formation forestière de Thiès (Centre FoReT) qui joue un rôle central dans la formation et le perfectionnement des compétences ; et
  - aux activités opérationnelles de suivi réalisées par les différents services du MEDD : Direction des Eaux, Forêts, Chasses et de la Conservation des Sols, Direction des Aires Marines Communautaires Protégées, Direction de l'Environnement et des Établissements Classés, Direction des Parcs Nationaux.
- Un **cofinancement en nature de 200 000 US\$** représentant les diverses dépenses liées à la mise à disposition des locaux, l'eau et l'électricité et autres facilités.
- Un **cofinancement en espèce** : une correspondance vient d'être transmise au Ministère de l'Economie, des Finances et du Plan pour solliciter une contrepartie de 800 000 US\$ relativement à la mise en œuvre du projet pendant ses cinq ans de vie.

Veillez agréer, **Madame la Représentante-résidente du PNUD**, l'expression de ma considération distinguée.



Ministère de l'Environnement et du Développement Durable – route des fronts de terre angle Père Maristes  
Tel: (221) 33 859.13.42 - Fax: (221) 33 822.21.80 - BP 4055 – DAKAR



N° 00219 /ANACIM/DG/SG/DEM

Dakar, le 17 FEV 2015

**Le Directeur Général,**

**Objet :** Lettre de cofinancement au projet « Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions- Republic of Senegal (PRGTE)

**Madame la Représentante-résidente,**

Avec un **cofinancement parallèle de 3,5 millions de USD**, les investissements du Gouvernement sénégalais, à travers l'ANACIM, permettront d'assurer la gestion du réseau de stations météorologiques qui constituent un fondement pour soutenir la collecte et l'analyse de l'information climatologique telles que planifiées par le présent projet FEM dans les zones des Niayes et de la Casamance.

Par ailleurs, le présent projet LDCF pourra bénéficier de l'expertise technique de l'ANACIM qui va jouer un rôle important de soutien aux Groupes de Travail Pluridisciplinaire (GTP), qui sont une plateforme regroupant les principales parties prenantes impliquées dans le recueil, le traitement et la diffusion de l'information climatique.

Nous attendons la mise en œuvre de cet important projet pour le Sénégal car il apporte une réponse aux défis du changement climatique tels que identifiés par le Programme d'Action National pour l'Adaptation aux Changements Climatiques (PANA).

Veuillez agréer, **Madame la Représentante-résidente**, l'expression de ma considération distinguée.

**Magueye Marame NDAO**

**A**  
**Madame Fatou Binetou DJIGO**  
**Représentante - Résidente du**  
**Programme des Nations Unies pour le**  
**Développement (PNUD) au Sénégal**  
**Coordonnatrice du Système des Nations-Unies**  
**Route des Almadies**  
**DAKAR**

## Programme des Nations Unies pour le développement



February 18<sup>th</sup>, 2015

Dear Madam,

**Subject:** Co-financing Letter for the Project “« *Strengthening land & ecosystem management under conditions of climate change in the Niayes and Casamance regions- Republic of Senegal (PRGTE)*”

I'm pleased to inform that the UNDP CO in Senegal hereby commits to providing US\$ 500,000 in co-financing to the above-mentioned project over the period 2015-2020, as presented in the project document.

I also confirm that the: “*Programme on Coastal and marine resources Governance in the West African Ecoregion*” can be used as parallel co-financing (2 millions US\$) to contribute towards developing communities and technical management capacities of the coastal zone through: the establishment of sustainable financial mechanisms at local level; and develop capacity for the promotion of suitable technologies for the rehabilitation of coastal erosion, management of climate risk.

F. Bintou DJIBO  
Resident Representative



Ms Adriana Dinu,  
Executive Coordinator,  
UNDP/GEF

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Immeuble Wollé Ndiaye - Route du Méridien Président- BP : 154 - Dakar, Sénégal - Téléphone : (221) 33 859 67 67  
Télécopie : (221)33 820. 66.14 – Internet : [www.undp.org.sn](http://www.undp.org.sn) - Adresse électronique : [registry.sn@undp.org](mailto:registry.sn@undp.org)