ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A
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Email: afbsec@adaptation-fund.org

ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	REGULAR PROGRAMME
Country/ies:	SENEGAL
Title of Project/Programme:	Reducing vulnerability and increasing resilience of coastal communities in the Saloum Islands (Dionewar)
Type of Implementing Entity:	NIE
Implementing Entity:	Centre de Suivi Ecologique (CSE)
Executing Entity/ies:	Comité National pour l'Alphabétisation et la Formation (CONAF), Agence Nationale pour l'Aquaculture (ANA)
Amount of Financing Requested:	1,256,983 (in U.S Dollars Equivalent)

I. Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

1.1. The Senegalese coastal area: a key area for socioeconomic development

Senegal has 700 km of coastline concentrating 60% of the population (estimated at 12.5 million inhabitants in 2010) and most of the urban sites and economic activities in the country. Indeed, 85% of industries and services are located in this area which is home to two economic sectors: fishing and tourism. This concentration is increasing and the coastal area will continue to play a key role in the national development process over the next decades.

This part of the country shows a high population growth. Prospective components from the Master Plan for the West African Coastline (SDLAO[1] in French) indeed show a sharp increase in the coastal population mainly urban.

Fishing is a strategic economic sector contributing for 2% to the national GDB and generating 600,000 direct and indirect jobs. On average, its part in Senegal's total exports is nearly 32%. This part of the country is host to important fisheries related installations like fishing docks.

[1] Conducted in 2011 in collaboration between IUCN and the WAEMU

The coastal area is also of great importance for biodiversity with many marine protected areas, national parks, biosphere reserves, fauna reserves and protected forests. These biodiversity areas are a significant asset for the tourism sector.

This area is also home to large mangrove ecosystems which, in addition to providing shelter and food to the fish fauna, have important ecological (flood control, carbon sequestration, etc.) and economic functions (oyster farming and use of firewood, fishing, etc.). Mangroves developed mainly in the downstream parts along the banks of rivers and "bolons": between 590 and 800 kilometers[2].

Located in this region, the Saloum estuary (figure 1) is of particular interest due to the important biodiversity it supports. It is a big estuarine complex with a drainage basin of 29,720 km2 (4,309 km2 for the estuarine part), opening in the Atlantic Ocean by three main distributaries with an estuarine functioning: the Saloum to the north, the Bandiala to the south and the Diomboss in between[3]. The Saloum is relatively wide (1-2 km) and deep (13 to 25 m) between its mouth and Foundiougne but after till Kaolack it is narrow (<500m) with depths always less than 8 m. The Diomboss has a main width of 4 km with depths between 10 and 25 m.

This estuary isolates two large groups of islands: the Gandoul islands in the north, Bétanti and Fathala in the south formed from beach ridges. The Saloum River is bordered by a 14-19 km-long sand spit, the Sangomar Arrow, a 15-18 km-long sand spit between Palmarin and its distal end.

One hundred and fourteen (114) species from fifty-two (52) families were identified in this estuary. The presence of the manatee *(Trichechus senegalensis)* and the dolphin *(Sousa teuszii)* in the Saloum and its “bolons” shows the richness of the specific aquatic fauna of the river watershed[2].

[2] Blasco, 1983; Diop and Bâ, 1993; in MEPN, 2005: Rapport sur l’Etat de l’Environnement au Sénégal. Edition 2005

[3] DIOP, I and al., 2002. Senegal national report. Phase 1: integrated problem analysis. GEF MSP Sub-Saharan Africa Project (GF/6010-0016): "Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa"

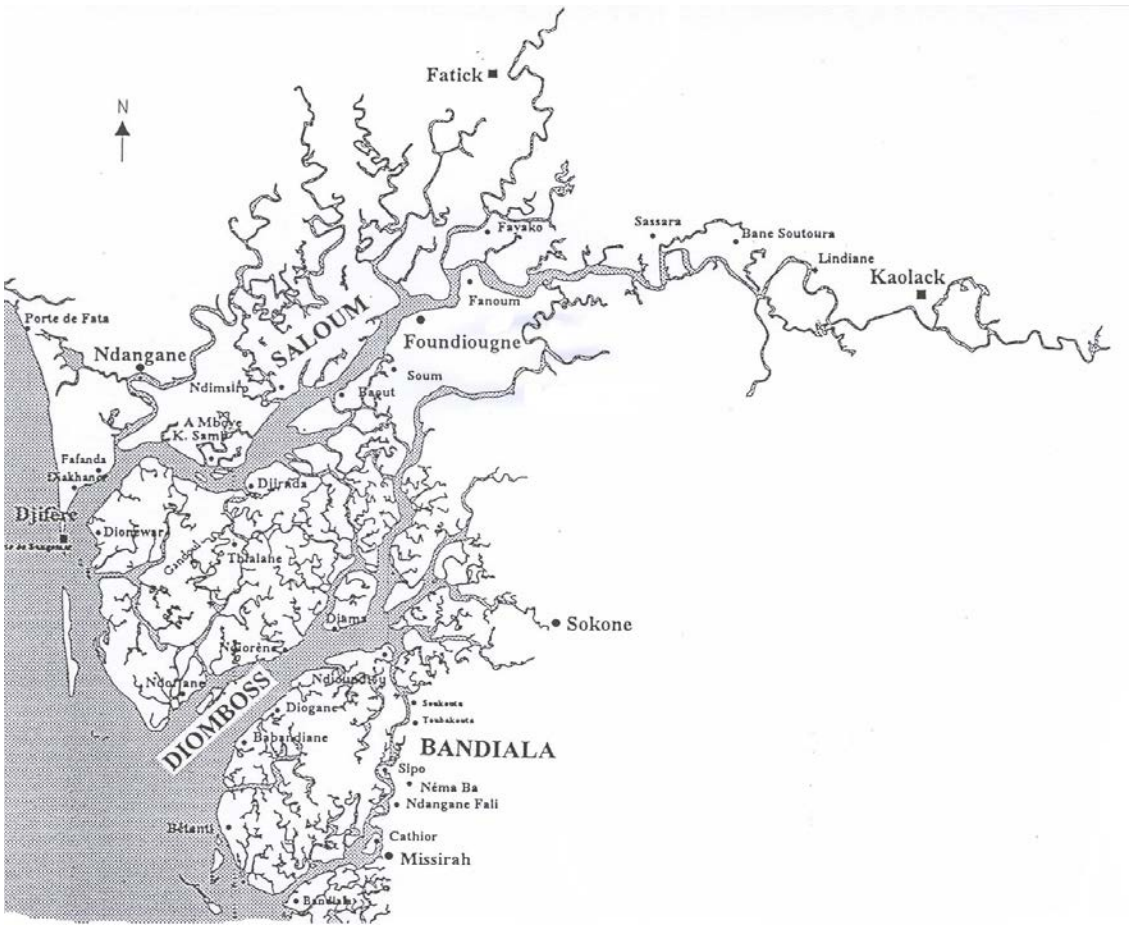

Figure 1: The Saloum Estuary (from Diouf, 1994, in Diop and al. 2002)

Fishing is the major activity for inhabitants in the Saloum Estuary. The annual fish production is estimated at 10,000 tons on average. Landings reached a record of 29,290 tons in 2003. However, it is noted a depletion of fish stocks against the performance recorded in the 1960s and 1970s, due to climate change and over-exploitation.

The location of the Dionewar Island in a Delta area gives huge potential in the field of fisheries which is the population's primary activity. This is why the Serere ethnic group in the island, mainly fishermen by profession, is commonly known as "Serere Niominka" or "Serere with feet in the water". Fishing is considered the main cash activity, unlike in other parts of the country where agriculture is leading.

Women are very active in the processing (Drying, smoking, salting and fermentation) of fish products. In the Dionewar Island, they are grouped into 18 groupings with 270 members. Indeed, the collection of *Arca sinelis*, a bivalve (shell) shellfish locally known as ''pâgne'', its processing and marketing are exclusively done by women. They have processing facilities but are faced with the availability and quality of the raw material. The amounts collected continue to decline, as the size of individuals, despite the biological rest implemented annually from July to September. After all, the Federation of

GIE (Economic Interest Groupings) "FELOGIE" Dionewar received the Presidential Award for women empowerment in 1996 and 2003. Fish products (fresh or processed) from the island are marketed in nearby urban centers or in Dakar.

In the past, populations in Dionewar would grow rice in the Island and in satellite islands with several hectares of rice fields. With drought cycles recorded in the late seventies and the lack of varieties fit for the new rainfall context, rice cultivation was abandoned. Nevertheless, with the restart of rains over the last years, some producers have slowly resumed rice cultivation. Exploitation of non-timber forest products is of great importance for the local economy and food security. However, the plant cover has gone through significant damage due to the combined effects of overexploitation and climate change. Vegetation in the island mainly comprises mangrove along the submersible areas and their surroundings while in the inland one may find a Sudanian-type vegetation with mainly: *Detarium senegalense*, *Parinari macrophylla*, *Tamarindus indica*, *Ceiba pentandra*, *Elaeis guineensis* and *Cocos nucifera*. The mangrove has suffered the silting impact from the breakdown of the land strip and its disappearance accelerates coastal erosion in the island and neighboring islands. Indeed, mangrove plays a physical role in stabilizing soils in place through the action of mangrove roots and serves as a transition zone that protects the coast from attack due to waves, storms and typhoons. Mangrove serves as a surge swell. Its depletion also impacts on the wildlife that uses it as a refuge. Here fish and crabs reproduce, mollusks grow and some predators come here to hunt. Some birds hunt while others nest there. Mangrove helps fertilize the estuary fostering the development of the phytoplankton which is the first element in the food chain. They provide the populations seafood *(Murex sp, Anadara senilis, Crassostrea gasar, Thympanothonus sp, Cymbiumsp.,* Etc.). Total annual revenues from shrimp fishing are estimated at 22 million US dollars[4] (Niane 2004 in Ndour and al, 2011).

The village populations have already initiated mangrove reforestation and established a natural resources management committee responsible for the exploitation of forest products and observance of the biological rest of mollusks. They have also built small dams with support from various partners. But they are still faced with scarce financial resources, lack of access to technologies allowing them to improve the productivity and quality of processed products.

[4] Niane 2004, in Ndour N., Dieng S. & Fall M. Rôle des mangroves, modes et perspectives de gestion au Delta du Saloum (Sénégal). VertigO – la revue électronique en sciences de l'environnement [En Ligne], Volume 11 Numéro 3 | décembre 2011, mis en ligne le 07 février 2012, consulté le 27 juin 2015. URL : http://vertigo.revues.org/11515 ; DOI : 10.4000/vertigo.11515

Figure 2: Dike protecting against rising sea water built by populations in Colbasssy (CSE, January 2015)

1.2. Climate change and its impacts in the Senegalese coastal area

The Senegalese climate is Sahelian in the North to Sub-Guinean in the South and characterized by alternating dry season from November to May and a rainy season from June to October. The average annual rainfall ranges from 300 mm in the semi-desert North to 1,200 mm in the South with inter-annual variations. The country suffers the adverse effects of climate change which are felt more on its 700 Km long coastline and from the impact of the rising sea level with, as corollary costal erosion, sea water intrusion in farmlands, salinization of water resources and the destruction of infrastructures.

According to a study funded by the World Bank in 2013, the observation of the climate trend suggests climate change over the last 50 years with a protracted dry period from 1968-1969. This climate deterioration appeared in an erratic inter-annual rainfall but also a decrease in rainfall volumes resulting in a significant shift of isohyets towards the south (see figure 3). This drought is one of the major causes of environmental degradation and rural exodus.

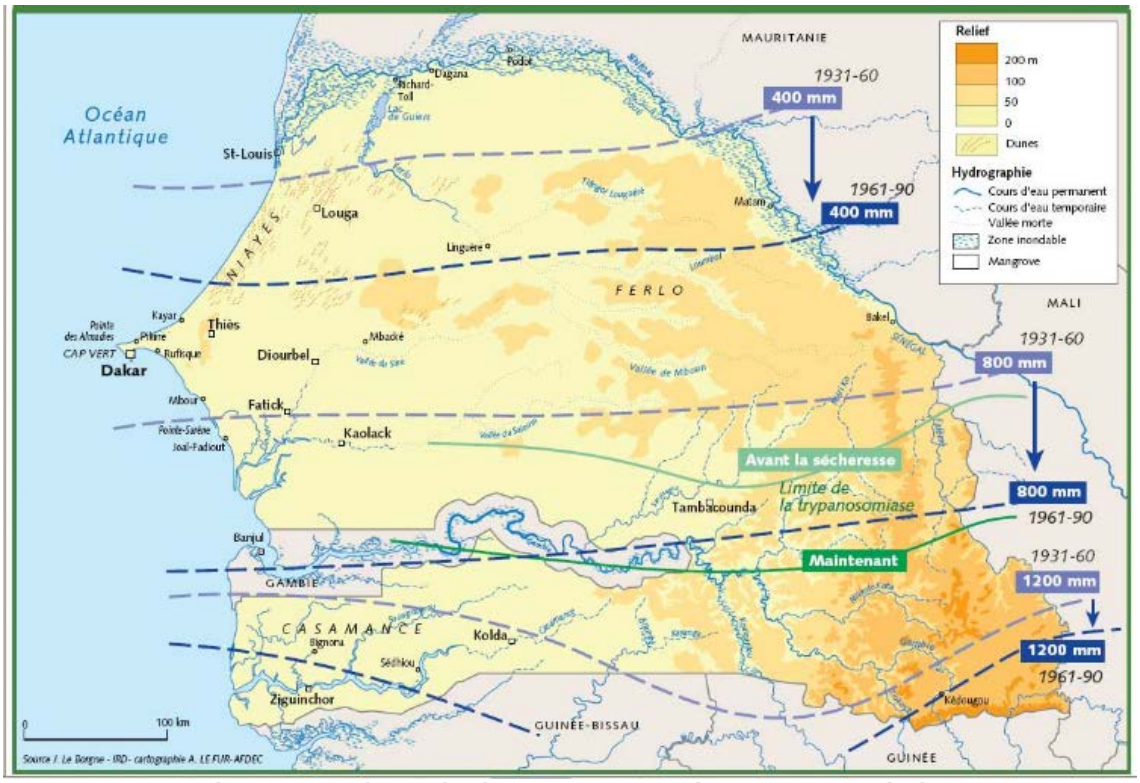

Figure 3 : Isohyets in the 1931-1960 and 1961-1990 periods
Source : Institut de Recherche et Développement
(http://www.cartographie.ird.fr/SenegalFIG/secheresse.html)

Fishing is one of the sectors most affected, with fishery yields expected to decline due to changing climatic conditions, mainly rainfall, wind regime and water temperature.

Drought cycles that occurred throughout the Sahel from 1968 and rainfall variability have led to increased salinity with rates above 50 ‰ in the rainy season. This phenomenon became persistent in the 1990s with surface water becoming hypersaline, especially in river upstream where the salinity level exceeds 150 ‰. This salinization influences the size of the fish at maturity[5], growth and movements[6]. Moreover, various studies[7] have associated mangroves degradation or dynamics with the persistent rainfall variability while this ecosystem plays a key role in the development of fishery resources. In the Saloum estuary also, salinity increases from downstream to upstream (120 per thousand salinity, measured upstream Saloum), which comes with certain peculiarities as to the mode of tide penetration in the river. Indeed, there is a time and flow speed higher than those of the ebb[8]. In addition, the amount of water into the estuary is larger than that coming out partly due to the inertia caused by the adjacent areas of: mangroves, salt flats and "bolons", including. This very special hydrological functioning is essentially attributed to a low slope especially in the downstream part of

[5] Panfili and al. 2004a, 2004
[6] Diouf & Goudiaby 2006
[7] Diaw, 1990, 1999, 2000; Soumare 1992; IUCN 1998; Diop and al 2000; Moreau 2005; Dièye and al 2008; Andrieu and al 2008; Niang 2009
[8] (Barusseau and al., 1985, 1986)

the river and the rainfall deficit recorded since the late 1960's leading to a virtual absence of freshwater flows during rainy season[9] and a concentration of salts by evaporation[10]. Fish catches in the Saloum Delta shrank from 30,000 to 10,000 tons between 1970 and 1990, along with declining populations' livelihoods[11].

Predicted temperature increase, ranging from 1.4° C to 5.8°C by 2100 (IPCC, 2007) will have significant effects on fishing stocks, in terms of distribution, composition and abundance. By 2030, it is foreseen a major decrease in captures and estimated market value of fishery products. This will result in accumulated losses amounting at USD 136 million between 2020 and 2050, representing 3.23% share of the average GDP 1981-2005.

This situation has created great distress among the population, leading the youngest fringe to turning to clandestine emigration in poor security conditions resulting in loss of life. Furthermore, it is observed a drop of fish and seafood consumption and animal protein intake.

Flooding associated with storm surges is another impact of climate change, which, in conjunction with sea-level rise, places more people and socioeconomic infrastructures (mainly fishing docks and hotels) at risk in the coastal zones.

1.3. Climate change scenario

Future projections around 2030 (2010-2039) and 2080 (2070-2099) (IPCC Data Center) forecast an increase in average annual temperature on the Senegalese coasts from 1.12 to 1.23°C. This will further increase around 2080 from 2.65 to 4°C in coastal areas.

As for rainfall, predicted variations in the great North-West quarter of Senegal range from -4.5 to -19% by 2030 to -18% to - 55% by 2080. For the same period with a more pessimistic climate scenario, rainfall on the Senegalese coasts should drop almost twice more.

Therefore, considering the whole Senegal, it is expected more years of severe drought while a global sea level rising to 20 cm by 2030 and to 80 cm by 2080.

According to Senegal's second National Communication to the UNFCCC, although changes in precipitations suggest a general downward trend in most part of the country, there are few indications on their variations particularly in terms of extreme events. On the one hand, global warming could increase decline in rainfall leading to increased drought. On the other hand, increasing the holding capacity of moisture in the atmosphere due to rising temperatures could result in rainfall events of larger intensity making the region more vulnerable to flooding.

[9] Dacosta, 1993
[10] MEPN, 2005
[11] Diouf, 1996, in Ndour et al., 2011

1.4. Natural hazards and risks

Coastal erosion:

Under the combined effect of all these changes, the Senegalese coastline shows widespread erosion. Areas most sensitive to this hazard are the deltas and estuaries of the three major rivers, as the sediment supplies can barely compensate losses to erosion in these low areas. Since these areas are of great ecological importance, erosion can cause significant losses of biodiversity. Erosion rates generally do not exceed 2 m/year but the beaches may recede by more than 10 m/year locally.

Figure 4 : Erosion of sandy coasts from the 1950s according to bibliographic data (source: I. FAYE)

One of the most severe signs of these hazards is the breaking of the Sangomar Arrow on 27 February 1987 in the wake of an extraordinary swell. This event occurred towards Lagoba (or Diohane), which is the most fragile part (80 to 110 m wide).

The natural functioning of this arrow is an extension to the south in favor of littoral drift that dumps part of its sediments there, appearing as successive hooks partly from shoals bordering the tip of the arrow. From 1927 to 1987, it was reported to have increased by 4 km. Hooks identify small lagoons which are filled gradually, and inhabited by mangrove or marsh vegetation. Based on bathymetric, photographic and satellite topographic substrates, evolution of the Sangomar Arrow distal end was restored between 1907 and 1987[12]. It is primarily characterized by a period of decline northwards between 1907 and 1927, with 88 m annually, and by an almost continuous southward extension from 1927, with 31 m annually and values higher than 100 m annually (between 1946 and 1969). Meanwhile, the end experienced strong thickening between 1954 and 1969.

Then comes a sharp slowdown in expansion rates to the South which, between 1969 and 1981 varies from 22 to 35 m annually. The 1981-1984 period was characterized by stability of the Arrow. Then from 1984 until 1987, extension resumed southwards at a rate of 175 m annually. It should also be noted that the hooks seemed to appear only from 1958. Between 1986 and 1987, two small hooks, surrounding a lagoon, formed successively at the Arrow tip.

According to Diaw (1997, 2003) and Thomas and Diaw (1997) the breakdown of this arrow could be explained by a range of sedimentological, geomorphological and hydro-climatological factors that are non-exclusive one another: temporary absence of "upstream" sedimentary power by reduction of products from northern areas of the Petite Côte, strong tightening and fragility of the arrow at a place called Lagoba, improvement of the rainfall situation contributing to the ebb flushing effect and slowing fattening changes, preferential erosion of the inside of the Arrow against the configuration of the river bed and the existence of inter-hooks corridors, modifying pre-littoral shoals at Lagoba which can be seen on the SPOT *ante* and *post breakdown* satellite images, waves of high amplitude (2.5 to 3.5 m) combined with high water tides (levels of 1.71 m in Dakar and 1.95 m in Banjul).

With the Arrow breakdown in 1987, a new evolution began, marked by a very strong erosion of the northern edge of the breech and the external shore while the end of the new Sangomar Island continues to advance southwards at average rate of 229 m annually (Figure 5) with the development of two hooks[13]. Based on these observations, several authors believe that sedimentary transits by longshore drift are thought to be estimated between 160,000 and 180,000 cubic meters annually[12].

[12] Diaw and al, 1991 and Diaw, 1997
[13] Diaw, 1997

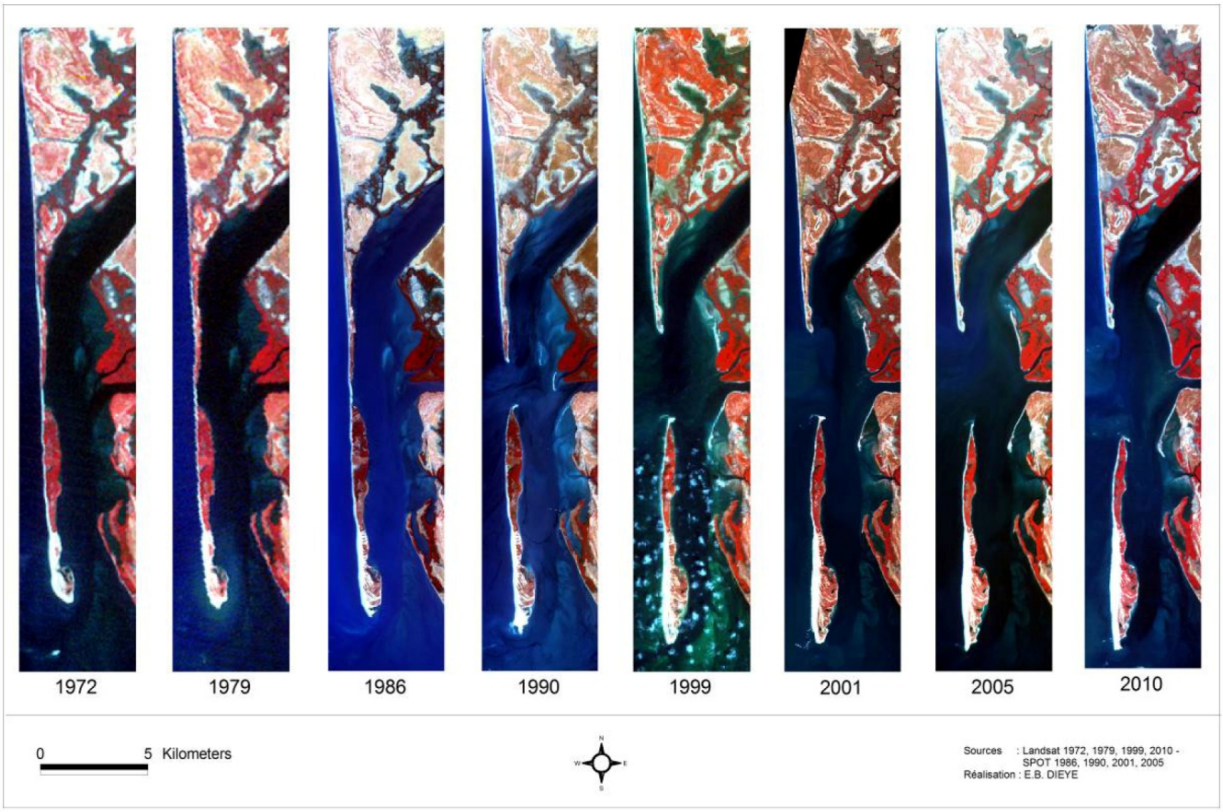

Figure 5: Dynamic of the Sangomar Arrow between 1972 and 2010 (Thomas and Diaw, 1997)

This event feeds into the formation and evolution process of the Saloum Delta and comes with (Diaw, 1997):

- an intense erosion of the northern edge of the arrow with rates up to 128 m annually (down to 640 m between 1987 and 1992);
- a continuity and even acceleration, of the southwards extension of the distal end of the new Sangomar Island at a rate of 198 to 264 m annually between 1987 and 1991. One year after the breakdown, the gap measured 1 km wide, 10 years later, it reached 4 km.

This break occurred just opposite the Dionewar Island leading to profound changes in the estuary hydrodynamics and sedimentation. With this breach, the Atlantic Ocean runs into the River Saloum at the island with deep changes both in the hydrodynamics and sedimentology of the estuary.

These phenomena compound the depletion of fish stocks, coastal erosion and degradation of the vegetation on the island due to human pressure and drought cycles that prevailed from the early 70s to the mid-2000s. In Dionewar, the impacts are felt particularly in the mangrove which, since the breach was opened, has been hit by silting fostering its depletion thus compounding erosion and flooding. Mangrove ecosystems provide refuge and are reproduction zone (spawning areas) for fish and seafood etc.

Figure 6 : Overview of coastal erosion in Dionewar (CSE, January 2015)

All these changes have heavily affected the island's socioeconomic situation because most economic activities are driven towards the use of resources from the sea (fish, shrimps, shellfish etc.).

Flooding

The flooding hazard can be seen in two different forms: river flooding and flood run-off. These floods are caused by weather also of different nature: river flooding caused by cumulative rainfall during the rainy season and urban flooding caused by short heavy rains on impermeable surfaces. In coastal area, the sea level can be an aggravating factor.

Figure 7: Seawater intrusion in Dionewar, at Colbassy (CSE, January 2015)

Communication from the Atlantic Ocean to the Saloum River arm at Dionewar has completely changed the hydrodynamics around the island with frequent floods threatening socioeconomic housing and infrastructures as soon as heavy rain starts. Floods have become a major concern for populations in the island.

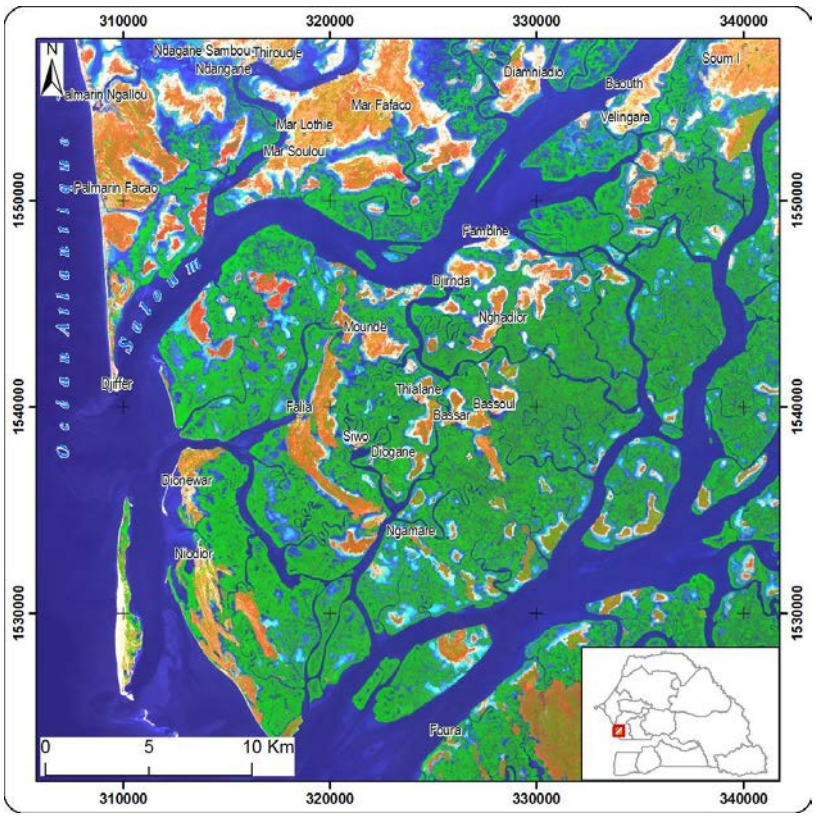

Figure 8: View of the Sangomar Arrow broken

1.5. Vulnerabilities

The Senegalese coastline is already morphologically fragile and suffers from the effects of an almost anarchic occupation and use of space combined with coastal erosion. That includes a process of degradation and destruction of hotel or housing infrastructures, lower productions (agricultural and fish), reduction or loss of beaches as well as disruptions on mangrove ecosystems and natural habitats.

Over the 2005-2030 periods, the coastal vulnerabilities of urban type are estimated to grow at 16%, at the expense of agricultural and natural areas.

The following tables provide an overview of the evolution of vulnerabilities in the Senegalese coastal area from 1990 to 2080 and by major coastal sector.

Table1 : Evolution of coastal vulnerabilities against the baseline situation

Vulnerability	Evolution of vulnerabilities against the baseline situation (in km of coast and in % of increase against 1990)									
	1990 (km)	2005 (km)	Diff.	1990-2005 (%)	2030 (km)	diff	1990-2030 (%)	2080 (km)	Diff.	1990-2080 (%)
Urban	127.0	143.3	16.3	13%	166.5	39.5	31%	168.4	41.4	33%
Agricultural	260.8	249.0	-1.9	-5%	236.4	-24.5	-9%	234.5	-26.3	-10%
Natural	126.7	122.3	-4.4	-3%	111.7	-15.0	-12%	111.7	-15.0	-12%

Table 2 : Evolution of urban vulnerabilities against the baseline situation

Coastal sector	Evolution of urban vulnerabilities against the baseline situation (in km and % of increase against 1990)						
	1990 (km)	2005 (km)	1990-2005 (%)	2030 (km)	1990-2030 (%)	2080 (km)	1990-2080 (%)
Great Coast	11.6	12.1	4%	15.1	29%	15.4	32%
Cape Verde	63.5	70.0	10%	76.6	21%	76.6	21%
Small Coast	46.5	55.8	20%	69.5	49%	71.0	53%
Casamance	5.3	5.3	0%	5.3	0%	5.3	0%

1.6. Selection of the area of intervention

The reasons for the selection of the areas of intervention are essentially due to the following considerations: a) the severity of these combined hazards in the Saloum Islands; b) heavy disruptions caused by these hazards on the lives of thousands of populations especially women; c) the significant impacts of these disruptions on the natural habitats and the biodiversity characterizing this part of the country.

The project is therefore going to intervene in the Island of Dionewar and its satellite islands which host major economic activities for populations.

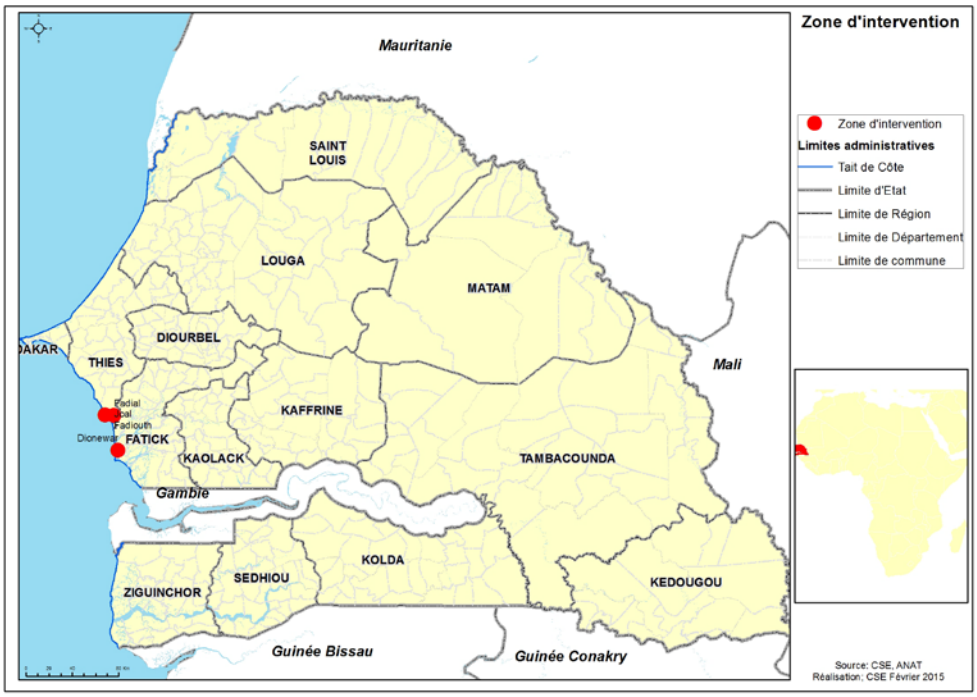

Figure 9: Location of the intervention areas

The location of planned realizations (ridges, dikes, fish farms) is shown in the next figure.

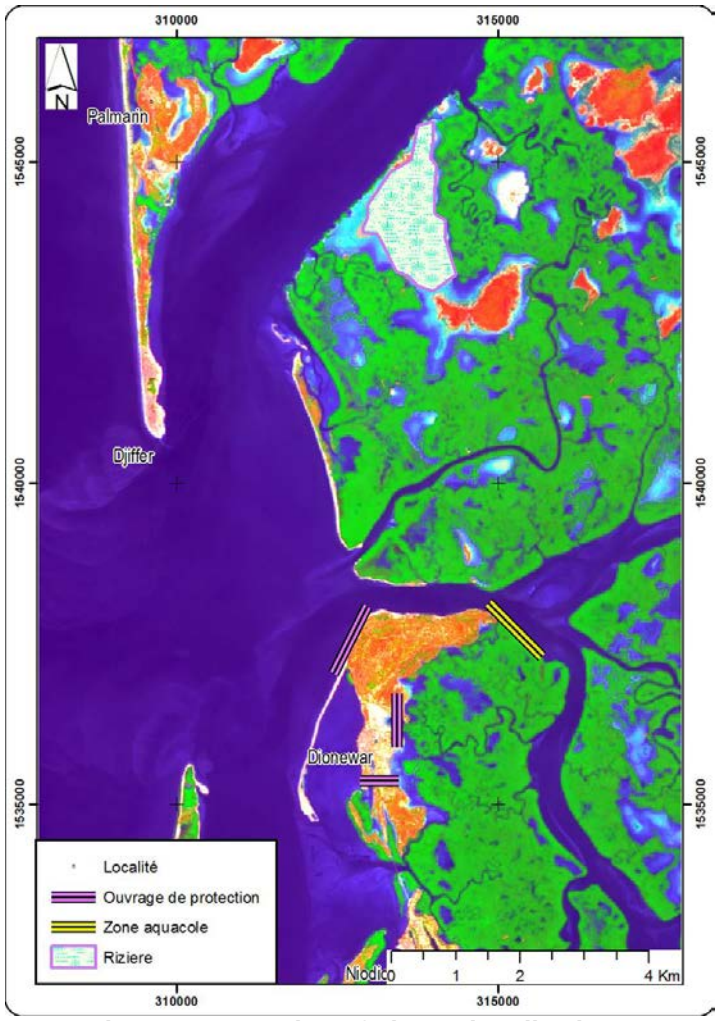

Figure 10: Location of planned realizations

II. Project / Programme Objectives:

List the main objectives of the project/programme.

Overall project objective:

The overall objective of the project is to reduce the vulnerability of populations in the Saloum Islands to flooding and coastal erosion. The resilience of natural habitats and populations will be enhanced through the implementation of protective measures, revival of the main productive sectors and promotion of local adaptation strategies to cope with the adverse effects of climate change.

Specific objectives:

The project specific objectives are to:

- ✓ *SO1:* Improve the resilience of the sectors of fishing, aquaculture and forestry to natural hazards.

- ✓ *OS2:* Reduce the vulnerability of populations and natural habitats to hazards through the establishment of structures to better regulate flooding, control coastal erosion and fight against land salinization.

- ✓ *SO3:* Enhance local development planning through integration of climate change, setting up local conventions and documenting lessons learned

III. Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well defined interventions / projects.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. Enhancing resilience for productive sectors in Dionewar island	*1.1. Fish and oyster farming system developed for 18 women associations, including the setup of 10 fish ponds, 200 spat collectors and 1000 growout bags (USD 56,000)* *1.2. At least 6 ha of trees planted (enrichment planting with especially coconut and oil palms) and 5 ha of mangrove rehabilitated in Dionewar and its satellite islands in order to revitalize the main productive sectors (USD 40,000)* *1.3. At least 18 women economic interest groupings and natural resources management committee trained to improve their technical performance (USD 44,000)* 1.4. *Fish and oyster farms management plan developed (USD 10,000)*	The resilience of the main productive sectors of Dionewar Island is enhanced and sustainable livelihoods of populations improved	150,000

2. Protection against flooding, coastal erosion and salinization in Dionewar	*2.1. The 2 dikes to protect against flooding are rehabilitated and extended over 2 km (USD 620,000)* *2.2. Dead palm trees are planted over 2 km in the water to serve as breakwaters and mitigate coastal erosion in Dionewar Island (USD 200,000)* *2.3. Ridges are built around rice plots in Dionewar (USD 25,000)* *2.4. A maintenance plan developed, involving key stakeholders (USD 20,000)*	The vulnerability of populations in Dionewar to hazards is reduced with the construction or rehabilitation of protection structures	865,000
3. Strategic planning and knowledge management	*3.1. The Local Development Plan (PLD) is reviewed in order to integrate adaptation to climate changes options & costs benefits (USD 21,000)* *3.2. Rules governing the exploitation of timber and non-timber forest products and the biological rest updated and formalized through a Local Convention (USD 7,000)* *3.3. Project's lessons learned documented and shared (USD 15,000)*	Climate change is integrated in local development planning, natural resources are used in a more sustainable way and lessons learned are documented and shared.	43,000
4. Project/Programme Execution cost			100,510
5. Total Project/Programme Cost			1,158,510
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			98,473
Amount of Financing Requested			1,256,983

Alignment with the Adaptation Fund's results framework

The overall objective of the project (« to reduce the vulnerability of populations in the Saloum Islands to flooding and coastal erosion") contributes to the Adaptation Fund's Outcomes 1 ("Reduced exposure at national level to climate-related hazards and threats"), 5 ("Increased ecosystem resilience in response to climate change and variability-stress induced") and 6 ("Diversified and strengthened sources of income for vulnerable people in targeted areas livelihoods"). This will be achieved by enhancing the resilience of natural habitats, populations and their activities to the adverse effects of climate change and climate variability.

The first outcome of the project ("The resilience of the main productive sectors of Dionewar Island is enhanced and sustainable livelihoods of populations improved") aligns with the Adaptation Output 6: "Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability".

Outcome 2 of the project ("The vulnerability of populations in Dionewar to hazards is reduced with the construction or rehabilitation of protection structures") aligns with the Adaptation Fund Outputs 4 and 5: "Vulnerable physical, natural, and social assets strengthened in response to climate impacts, including variability change".

The 3rd outcome of the project ("Climate change is integrated in local development planning, natural resources are used in a more sustainable way and lessons learned are documented and shared ») is aligned with the Adaptation fund Output 7: "Improved integration of climate-resilience strategies into country development plans".

IV. Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	December 2015
Mid-term Review (if planned)	June 2017
Project/Programme Closing	December 2018
Terminal Evaluation	February 2019

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Climate change/variability is impeding development efforts in Dionewar Island. The populations are making their earning mainly from fishing activities, agriculture and forestry. Since the breaking of the Sangomar arrow, the communication has been established between the sea and the river, increasing salinity and resulting in the degradation of the mangrove that is key to fishing activities, but also plays an important role in the control of flooding events. The increase of salinity has been exacerbated by rainfall decrease in the seventies and the eighties. Extreme climate events like heavy rains, combined with sea-level rise have resulted in more frequent and more unpredictable floods that threaten populations' security and goods. The fisheries sector is facing fish stock scarcity linked to changing climatic conditions, but also to overfishing. This situation leads fishermen to go farther and farther out to sea to make acceptable captures in view of the time and fuel invested.

The project ''Reducing vulnerability and increasing resilience of coastal communities in Dionewar" aims to be a response to the economic hardships and environmental challenges facing populations due to a high exposure to natural hazards. It will be implemented through: (1) investments for the development of aquaculture, the revival of fishing and processing of fishery products and replenishment of the vegetation ; (2) the establishment of protection structures to protect the Dionewar Island against flooding and coastal erosion; (3) the development of maintenance plan and local regulations to ensure an equitable and sustainable use of productive assets ; and finally (4) setting up a knowledge management system that can enable to draw on lessons learned.

The three components work in perfect synergy to enable the achievement of the general objective of the project.

Component 1 aims to enhance the resilience of the main productive sectors on the Dionewar Island through the development of fish and oyster farming, the replenishment of the vegetation cover and capacity building activities. It includes a set of measures to strengthen value chains for improved market access through better quality products, marketing development and greater efficiency in the use of natural resources. To cope with the rarefaction of fishery resources due to climate change and over-exploitation, quality improvement is one of the alternatives offered for maintaining or increasing incomes. Moreover, markets that guarantee fair and remunerative prices for seafood are those requiring stringent quality and safety standards. Therefore, the introduction of new production, processing and conservation techniques will help generate added value for local productions, resulting in increased incomes and food security for the whole community. Planned activities will ultimately help increase the influence of local

producers in the various links of the value chain: production, processing, marketing. Component 1 is closely linked with Component 2 and 3.

Through **Component 2**, the resources of the project "Reducing vulnerability and increasing resilience of coastal communities in the Saloum Islands (Dionewar)" will be used to production areas, housing and processing and conservation facilities against water and salinity. Protection through dikes rehabilitation will contribute to mitigate one of the village major concerns which is flooding. It involves existing dikes heightening and installation of flood control structures. The plantation of palm-trees will serve as a "break-water facility" and protect this part of the island from coastal erosion. Locally used in many parts of the Senegalese coast, this technology is based on traditional knowledge and is environmentally friendly. It has been successfully used to protect the neighborhood of Guet-Ndar (North of Senegal) and some parts of Fadiouth and Palmarin (Petite-Côte) against coastal erosion. It is appropriate in this context because of its low-cost for establishment and maintenance by communities themselves. Dionewar is an island and it would be time and resource consuming to bring in construction materials and machines from the continent if it was decided to build other types of facilities like stone dikes. The vegetal material to be used (dead palm-tree) is available less than 40 km from Dionewar and easy to transport. Component 2 will ensure strict compliance with the provisions of the Environmental Code, especially regarding environmental and social impact studies and development of an environmental and social management plan. It will help secure investments made in Component 1 and will generate lessons learned that will feed into Component 3.

Component 3 seeks to enhance local development planning and natural resources management while documenting lessons learned. It will foster the integration of climate change in the Local Development Plan and promote a local regulatory framework to rationalize the use of natural resources. Finally, it will draw from lessons learnt from all project activities for documentation and sharing at local, national and international levels.

The project strategy is to take an integrated approach linking up the 3 components.

Component 1: Enhancing resilience for productive sectors in Dionewar Island

Activity 1.1: Development of fish and oyster farms

This activity aims to boost the fisheries sector which is faced with the scarcity of fish stocks prompting populations to go further in order to make acceptable captures given the time and fuel spent. The project resources will be used to setup 10 fishponds for fish production. The project will also install 200 spat collectors in order to recover the spawning oyster mothers in the lagoon. It includes as well putting in place a suspension culture system above the seabed with 1000 growout bags which will collect larvae that have reached a fairly large size and that will grow there. Only indigenous species will be used and there will be no introduction of exotic species. In addition, the project will

purchase production equipment (ropes, fishing nets, boots, life life-jackets…).

The fish ponds will be 2.5 X 2.5 X 1.6 of size, meaning a capacity of 10m^3 each. The species chosen is a local one (Tilapia) and will not be stocked from the wild, but developed in hatchery by the National Aquaculture Agency (ANA).

In the implementation of this activity, the project will build on aquaculture experiences now underway in the Saloum Delta. The collection and growth of shells which are the latest activity are tested in Missirah, Sandicoly and Betenty with the support of PISA, FAO, ENDA and IRD but also WAAME-CIDEAL and the National Aquaculture Agency (ANA). The oldest experiment remains oyster farming with oyster farming GIE (economic interest groupings) in Joal and Sokone that produce, transport and market fresh oysters to Dakar.

This activity is intended mainly to local women association (economic interest groupings) and the use of the assets provided will be community based. The project will foster the adoption of an agreement between women association, the local government unit and the executing agency. This agreement will setup a saving mechanism (fees) from revenues generated by the oyster and fish production activity and the financial resources made available will be used to extend the establishment of spat collectors and to renew the equipment when required.

The beneficiaries (mainly women) have already a good organizational framework and a good experience of sharing such equipment. Therefore, they have already appropriate mechanisms and rules for managing and sharing the production and outcomes of the assets provided by the project.

Activity 1.2: At least 6 ha of trees planted (enrichment planting with especially coconut and oil palms) and 5 ha of mangrove rehabilitated in Dionewar and its satellite islands in order to revitalize the main productive sectors

Through activity 1.2, the project resources will be used to increase the density of the stands of coconut and oil palm trees that have long been an important source of income for populations in Dionewar. The enrichment planting will target 6 ha at least (especially coconut and oil palms) and 5 ha of mangrove will be rehabilitated. The population will contribute in terms of human investment.

The main activities will be:

- The setup of a tree nursery in close collaboration with the Forest Service
- The setup of an “access restricted forest area” (“*mise en defens”*) to facilitate the natural regeneration of species like *Detarium senegalense* and *Parinari macrophylla*
- Mobilization sessions to organize populations around tree planting activities
- The planting of trees
- The setup of committees tasked to monitoring the plantations. These committees

will be composed of members of the islands committee for natural resources management which will be reinforced if required.

Activity 1.3: At least 19 women economic interest groupings and natural resources management committee trained to improve their technical performance

Activity 1.3 will make it possible to train women oyster farmers and processers on new techniques for better recovery of products. About 270 women will be trained. New production techniques will ensure better quality products and more competitiveness, meaning access to new market and more remunerative prices.

Partnership will be developed with the National Aquaculture Agency (ANA) that has national mandate to support the development of aquaculture nationwide. They will provide support in the selection of performing species, quality of fish larva, biological monitoring and trainings.

For oyster farming, women will be trained on the garlands making techniques for capturing spat, transfer of juveniles in pouches for the growth and quality monitoring during growth.

For fish farming they will be trained on the fish feeding and water quality maintenance techniques.

Capacity building activities will also include linking producer organizations with traders and processors to ensure consistent supply and quality standards, training women groups on entrepreneurship, marketing of products, managing value chains, and accessing financing and credit. Participation of women groups to regional/international commercial fairs will be part of this capacity development activity.

Sustainable management of shellfish other than oysters (*Crassostrea gasar*) will also be taken into account in this community aquaculture: this is the arch (*Anadara senilis*), yet the (*Cymbium sp.*) and “touffa” (*Murex sp.*). Parks will be built around villages to create seeding and fallow areas where juveniles will be isolated until maturity. They will operate according to a schedule and allow these species to renew.

Activity 1.3 is also designed to build the capacities of the committee entrusted with the surveillance of natural resources and women transformers on valuation of non-timber forest products (*Detarium senegalense*, *Parinari macrophylla,Cocos nucifera and mango tree*). Doing so, it will strengthen the achievements already made with the establishment of a natural resource management committee.

The main activities will include:

- The identification of trainees, taking into account gender considerations
- The preparation of training materials
- The elaboration of a training programme
- The organization of training sessions, including exchange visits in neighboring

areas in the Saloum islands where similar programmes took place in the past

Activity 1.4 : *A management plan is developed for the fish and oyster farms*

Intensive fish farming requires constant maintenance and vigilance. If the management is poor or the funding inadequate, things can get pretty bad: toxic runoff, introduction of diseased species into populations, excess of food and waste influencing population densities, stressed out fish. This activity is designed to allow the recipients to benefit from the advantages resulting from the Oyster farms without jeopardizing objectives for sustainability and environmental safeguards. In partnership with ANA and target communities, management plan will be developed and implemented.

Component 2: Protection against flooding, coastal erosion and salinization in Dionewar

Activity 2.1: Rehabilitation and extension of dikes to protect against flooding

Activity 2.1 seeks the rehabilitation of the two dikes and their extension over 2 km to better protect housing, infrastructures and agricultural lands. With this activity, the project resources will help reduce the vulnerability of the Dionewar village and rising waters especially during the rainy season with start of high tides and storms. Activity 2.1 will be strengthened by activity 2.2 and will be implemented in close collaboration with researchers with focus on coastal management, civil engineers, local extensions, the local government unit and the communities themselves.

The main activities will be:

- A technical review of the functioning of existing dikes
- A feasibility study of the extension of these dikes, including environmental and social safeguards requirements
- The preparation on an environmental and social impacts management plan
- Social mobilization actions to ensure a fruitful involvement of the population through human investment sessions
- The heightening of dikes where it deems necessary
- The extension of the dikes

Activity 2.2: Planting 2 km of dead palm trees into the water

Activity 2.2 aims the planting of 2 km of dead palm trees into water to serve as “breakwater” and mitigate coastal erosion on the Dionewar Island. This tree planting will be set up where the phenomenon is most acute that is the north-eastern part of the island. Palm trees will be taken from the palm tree stands in the neighboring village of Samba Dia and will be cut into 2.5 m ridges and directly planted into water. Only dead stumps will be taken but as provided for in the Forest Code, a compensatory tree

planting will be conducted.

Activity 2.2 is linked with activity 1.2 through which a dense tree planting will be put in place to fix the shore just opposite the place where component 2 will plant dead palm trees. This planting will contribute to the stabilization of the beach.

The main activities will be:

- A feasibility study, including environmental and social safeguards requirements
- The preparation on an environmental and social impacts management plan
- Social mobilization actions to ensure a fruitful involvement of the population through human investment sessions
- The cutting and transport of dead palm trees from Samba Dia
- The planting of the dead palm trees in the water

Activity 2.3: Development of ridges around rice plots in Dionewar

Through activity 2.3, the project resources will be used to protect rice plots against seawater intrusion. It will help boost rice cultivation in the area, thus enhancing the sustainable livelihoods of women.

The operating costs will be handled by the project the first year of operation. A depreciation schedule will be elaborated through consultations with producers in order to amortize the equipment and to recover the operation cost related expenses. The money recovered will flow back into the Fund for Integrated Development of the Islands.

The main activities will be:

- Prepare a “cadastral map” for rice-growing areas
- A feasibility study, including environmental and social safeguards requirements
- Social mobilization actions to ensure the involvement of the population
- Purchase of equipment (ploughing, weeding, harrowing, harvesting, husking and bagging)
- Consultation with producers to design the appropriate arrangements to be put in place for the amortization of the equipment
- Realization of the ridges

Activity 2.4: A maintenance plan of coastal infrastructures developed, involving key stakeholders

This activity is geared toward creating the conditions for the maintenance over time of coastal infrastructures developed by the project. Its execution will include a partnership with the Rural Engineering Directorate, the Directorate of Environment and the Directorate of Civil Defense.

The main activities will be:

- Prepare a maintenance guide for each category of infrastructure

- Setup a management committee including the Local Government Unit, the extensions, the main community based organizations (including women) and the Sub-Prefect.
- Organize a report back session to present the outlines of the guide to the members of the management committee.

Component 3: Strategic planning and knowledge management

Activity 3.1: *The Local Development Plan (PLD) is reviewed/updated in order to integrate climate change adaptation options & costs benefits.*

Dionewar Local Development Plan (PLD) will be reviewed and updated to include risks and opportunities associated with long-term climate change and to make community investments more resilient. This revision will also allow incorporation of sustainable fisheries management measures. The different steps for this phase will include: (i) coordination of decision makers and the service provider team selected to revisit the local planning instrument; (ii) sharing tools for mainstreaming climate changes issues; (iii) climate changes vulnerability assessment and costs benefits of adaption options; (iv) revision and adoption of updated plan; (v) identify funding mechanisms for adaptation measures; and (vi) dissemination of revised local development plans.

Activity 3.2: Preparation of a Local Convention to better regulate the use of forest products and the biological rest

Activity 3.2 will allow updating and formalizing existing rules on use of forest products (timber and non-timber) and biological rest. To this end, a Local Convention will be prepared in order to promote environmentally appropriate, socially responsible and economically viable use of forests and fisheries resources.

The Local Particular attention will be paid to vulnerable groups. The most relevant negotiating tools will be used in this regard. In particular, participatory mapping of resources will be an important part of this activity, with separate mapping by women and men, followed by each group reporting its findings and decisions in a plenary for joint decision making. During these sessions, important efforts will be put in tackling the causes of the unsustainable practices.

In order to facilitate the enforcement of the new rules, the project will seek the commitments of communities, more specifically through engaging with those whose livelihoods rely mainly on activities that could be targeted by these new rules. Community leaders, elders and administrative authorities will be involved in order to foster acceptance of new rules. In addition, those who could be affected in terms of economic survival would be given priority in the development of alternative livelihoods, for example through the setting up of surveillance committees. As members of these committees, they may be supported by the project in developing bee-keeping activities.

Activity 3.2 will also include a baseline study on land tenure in order to make sure that land use and land rights issues will not arise.

Activity 3.3: Project's lessons learned documented and shared

Through Activity 3.3, collaborative planning approaches to be developed will enable multiple stakeholders to share knowledge, develop awareness, improve learning and improve replication.

Activity 3.3 is designed to regularly collect and document lessons learned at each stage of the implementation and integrate these into planning processes and future activities. Through this activity, at least 3 general reports on lessons learnt will be produced, one every year and shared in the region as well as at national level. The information packet will be translated into the appropriate formats and languages to allow dissemination through the community radios or television channels in the national languages. A particular emphasis will be put on strategies that led to improved adaptive capacities, considering gender specificities.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project will generate economic, social and environmental benefits. It will bring about and promote a set of innovations that will help improve the lives of the most vulnerable communities through the strengthening of sustainable production means, the use of revolving funds and the improvement of value chains (production, distribution and access to alternative markets). This will facilitate beneficiaries' climate resilience with a menu of options.

Vulnerable groups to take advantage of this project include:

- fishermen and women oyster farmers and processors: young men form the bulk of the workforce in fishing, oyster and cymbium collection activities. cymbiums. They are grouped in the CLPA (Local Artisanal Fisheries Committee). The Dionewar village has a fleet of 89 canoes with 12 having an average 3 crew (36 men) engaged in the oyster farming. They sell fresh products to women who are in charge of processing them. Considering the technical innovations and training proposed, the project will involve, at the start, about one hundred men, including 75 youth.
- as for women, they are much better organized within the Federation of Local GIE (FELOGIE) of 510 members and they run a mutual savings and credit Fund. In these 510 women, 80% (or 408) sell "loincloth" and the 20% (or 102 members) are oyster farmers which at the same time manage the infrastructure of the

center. Apart from women members of the FELOGIE, others (over a hundred) are engaged in the sale of "loincloth". New production techniques to be introduced by the project will enable all of these actors to increase the productivity of their activities, to maintain their income and be more resilient to climate change. The capacity building they will get will help them improve the quality of their productions giving them greater value.

- women rice farmers: the protection of rice plots from against salinity will contribute to boost production, reinforce food security and improve their income ;
- Community-based organizations: the training to be delivered by the project will improve natural resource management on the island while generating more income from the exploitation of non-wood forest products ;
- The State and local government units: these two actors are the first ones to be called upon by populations whenever they face flooding or other hazards. Securing people and their goods through the protection structures put in place will therefore reduce the level of stress enabling them to dedicate their resources to other sectors.

The trees planted will contribute to reduce wind erosion and increase populations' income in the medium term. In addition to contributing to regulate flooding, the mangrove offers other opportunities in the socio-economic plan allowing the diversification of income (eco-tourism, mangrove honey production, etc.).

To avoid or reduce potentially negative impacts of the project activities, an initial environmental impact study has already been conducted and this study identifies the potential risks and proposes mitigation measures. It is a preliminary study realized with the purpose to verify the alignment of the project activities with the AF's Environmental and Social Policy and to identify the potential negative impact that might result from these activities.

In addition, during the project implementation, environmental and social impact studies will be conducted prior to any physical achievement as required by the Senegalese Environmental Code and the environmental and social policy of the Centre de Suivi Ecologique (CSE), and in line with the requirements of the Environmental and Social Policy of the Adaptation Fund. These studies will also produce an environmental and social management plan to address potential negative impacts from the project interventions. It is the normal procedure that ESIA reports are approved by a technical committee and by the local communities. The environmental endorsement is issued only after this validation.

Land tenure can be a sensitive issue and will receive therefore particular attention. The Saloum estuary is characterized by a multitude of bolons and it is not difficult to find the necessary space to conduct oyster activities without interfering with navigation and other fishing activities. However, expansion of oyster farming requires communication across all Saloum islands to identify production areas while making sure to avoid barriers to seaworthiness.

Oyster farming actors shall inform the Dionewar City Council about the conduct and location of activities. For fish farming and planting of community coconut palms, committed groups will file an allocation request to the City Council. Indeed, decentralization texts give the City Council the authority to allocate land by authorization under the State-ownership. Oil palm plantations will be conducted on community basis and on the village forest reserves.

Mangrove reforestation will also be performed on the banks of bolons on spaces under the State-ownership of land.

List of benefits from the project

Benefit type	Baseline	At project completion
Social benefits	- Rural exodus due to isolation, scarcity of fish stocks and lack of income-generating activities - Poor response capacities - Lack of mechanisms for disseminating proven strategies to adapt to risks - High exposure to hazards	- Aquaculture development - New capacities acquired by populations on coastal protection and aquaculture Improved food security - Leverage on lessons learnt on coastal management and adaptation to climate change - Decline in rural exodus
Economic benefits	- Housing and infrastructures threatened - Low cost-effectiveness of investments din the main productive sectors - Processed fish products non-compliant with the quality standards - Continuous decline in populations' revenue	- Improved revenue particularly of women, - Revival of the economic activity - Securing investments
Environmental benefits	- Mangrove degradation - Degradation of the vegetation - Land salinization - Coastal erosion	- Rebuilding the vegetation - Protection of rice fields against salinity - Fixing of the shore and protection against coastal erosion

Equitable access to assets financed by the project is a core principle of this project. All members of the women grouping will benefit from these assets. The assets will not be allocated on an individual basis, but they will be shared and used in rotation. All of the

women will be trained on feeding and maintenance techniques. Backed by the technical staff from the National Aquaculture Agency (ANA), they will undertake feeding and maintenance tasks in turns. When they harvest and market the products, part of the revenues will be used to purchase fish feed and another part will go to the grouping fund. This fund could be used through the grouping's central purchasing in order to extend the shop or to provide loans to its members (revolving fund).

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

Populations in the target area of the project are active in fishing and/or related activities (processing, marketing of fishery products, etc.), in rice cultivation and exploitation of non-wood forest products. Activities planned under this project aim directly to secure these activities and improve the living conditions of the stakeholders. Eventually, securing these activities and the investments they require should translate in a more sustained fishing and agricultural production. Besides, capacity building in processing techniques, quality and management will result in a substantial increase in revenue.

The project will focus on the combination of adaptation options based on communities and ecosystems to better address the specific priorities of local populations. The emphasis is laid on new coastal protection measures that are cheap and more environmentally-friendly.

There are currently several initiatives with among other objectives to enhance the resilience and improve the sustainable livelihoods of populations in these areas. They are driven by technical services with human resources whose experience and expertise will be a definite asset for the project. It also applies for example to the shelfish collection and growth techniques already experienced in Missirah, Sandicoly Betenty and with the help of the FAO PISA Programme, ENDA, IRD and ANA. These achievements will be enhanced to fully utilize the project resources. Oyster GIEs in Joal and Sokone produce, transport and sell fresh oysters in Dakar (Almadies), on top of some orders by the hotels in the Saloum islands and the Petite Côte. Export opportunities to Africa, Asia and Europe exist, but oyster production remains very low to meet demand. Regarding fish farming, there are still no fish farms in Dionewar but there is a success story in Senghor Valley in Sokone and the population showed great interest in fish farming because of the worrying situation of declining fish stocks. Yet the majority of these families depend on fishery resources.

Local stakeholders also benefit from the support of several Non-Governmental Organizations (NGOs) and other multilateral or organizations or cooperation agencies in various areas. Thus the project "Women's Entrepreneurship and adaptation" launched by the COLLEGIA Groupe, CEGEP de la Gaspésie des Iles (Quebec-Canada) supported the Dionewar village women in fish processing providing the infrastructure serving as areas of processing, storage and office, but also by organizing training in accounting, financial management and organizational development. This project will consolidate these gains by allowing women processors to master new production

techniques that will generate added value. In addition, this project will build protective infrastructure, which in turn will be used to secure the facilities established under the COLLEGIA project.

Synergies and additionally will be sought wherever the opportunity arises and the project resources will reinforce or value those of various organizations operating in these areas whenever possible.

The populations of Dionewar will contribute to the realization of infrastructures under activities 2.1, 2.2 and 2.3 in terms of human investment (labor force). This will allow to optimizing the financial resources of the project.

D. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The project concerns are consistent with the Local Development Plan (PLD) and the local plan of action for the environment (PLAE) in the commune of Dionewar. These plans are based on the increased revenues with the introduction of technical innovations, the management of fisheries and development of fishery products. These plans also underscore the achievements for the protection and preservation of the village with focus on the mangrove. One of the priority actions of the PLAE of Dionewar relates to the construction and rehabilitation of dikes fight against coastal erosion and its consequences. The PLD of Dionewar also put priority on the capacity building of the population on dike construction techniques in order to address coastal erosion and saline water intrusion. In the Priority Action Programme (PAP) of this PLD, actions considered for the Axis “Environment, Natural Resources Management and Living environment” include the realization of dikes against coastal erosion and salinity and tree planting (including fruit-trees).

The project objectives are also in line with the strategic objectives of the 2013-2017 National Strategy for Economic and Social Development (SNDES in French) in terms of employment promotion and integrated development of rural economy. With respect to the second component, the project will contribute to diversify the production, reduce the vulnerability of agricultural activities and improve production and productivity of fisheries which are addressed in the SNDES (2013-2017). Through Component 1, the project is consistent with the objectives of Policy Statement of the Fisheries and Aquaculture (LPS-PA) Sectors, which aims, among other things, the development of inland fisheries and aquaculture.

The implementation of protective measures will contribute to the Priority Axis n°2 (“Human Capital, Social Protection and Sustainable Development”) of the Strategic Plan for Senegal’s Emergence (PSE). The PSE which is currently the main development strategic framework put emphasis on the improvement of living environment through

flood control inter alia, but also on the prevention and management of risks and disasters, mainly in coastal zones. The revival of the main productive sectors and the promotion of local adaptation strategies will contribute to the Priority Axis 1 (“Structural transformation of the economy and growth”) of the PSE, more specifically to programme on “agriculture, livestock farming, fish and seafood products and agrifood”: targeted actions through programme aim at implementing integrated approach to develop value chains and sector structuring. Aquaculture is one of the six priority areas and 27 flagship projects that can help to drive Senegal towards economic and social emergence.

The project considers the objectives of the “2013-2017 Five-year Agricultural Programme” (PAQ in French) which aims to ensure food security and improve rural living conditions by creating conditions allowing rural populations to find interesting to stay. The PAQ is structured around five major pillars including ‘’the issue of farmlands’’ this project is looking to protect and preserve.

The project reflects the priorities defined in the National Adaptation Plan of Action (NAPA) to Climate Change which considers that the main environmental concerns (flooding, coastal erosion, water and soil salinization, mangrove degradation and variations of fish stocks) the Senegalese coasts are witnessing are somehow directly related to climate factors. The NAPA thus includes a priority programme (Programme 3: “Protection of the littoral”) dedicated to coastal protection, reforestation, the construction of protective structures and training/information among the adaptation options selected.

Activities under this project will contribute to the overall objectives No 1 (Maintain existing natural and archaeological heritage and restore degraded areas) and especially No. 3 (Promote eco-development activities for populations in the RBDS) of the Integrated Management Plan of the Saloum Delta Biosphere Reserve. Expected results of this management plan include: "strengthening conservation and management measures of the RBDS areas", "mitigation of natural factors of environmental degradation (drought, salinity)", "strengthening organizational and mobilization capacities of village communities and local institutions" and "improving the living conditions of local populations through the implementation of income-generating projects".

E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project activities are in compliance with the spirit of the Coastal Act, especially ‘the maintaining of environmental balances, fight against coastal erosion, preserving site integrity, sea landscapes and heritage’’. Component 2 will be implemented in the spirit of the text.

The project also ensures adherence with the provisions of the Environmental Code, especially Chapter V which Section L48 stipulates that ‘’any development project or activity likely to harm the environment as well as policies, plans, programmes, regional and sectoral studies should be subject to an environmental review’’ that is why the environmental and social impact studies will be an important part of component 2.

The project will also comply with requirements of the National Strategy for Gender Equality (SNEEG 2005-2015) which aims: ‘’(i) to build an institutional, sociocultural, legal and economic environment enabling the achievement of gender equality in Senegal ; (ii) and effective gender mainstreaming in development interventions across the sectors. All project components will comply with these principles in their implementation.

The project will finally observe the provisions of the Fisheries Code, especially regulations on the quality control of fish products. Component 1 under the project seeks, among other things, to help women processors comply with the standards defined under this Code.

F. Describe if there is duplication of project / programme with other funding sources, if any.

The project will strive to avoid potential duplication with other funding sources for similar activities. The design of the project activities is based on complementarity and additionality with existing projects and programmes under development. This will be the case namely with the PAPIL (Support to Local Small Irrigation project) operating in the Saloum Islands mainly in the neighbouring islands of Djirnda and Niodior for the construction of protection dikes and mangrove reforestation. This project will cover the Dionewar Island which was not covered by the PAPIL project.

Initiated by the COLLEGIA Group, CEGEP de la Gaspésie des Iles (Quebec-Canada), the project ‘’Women Entrepreneurship and Adaptation’’ supports women in the village of Dionewar in processing fishery products by providing them with facilities used for processing, storage and offices. This project will consolidate these gains by helping women processors to control new processing and conservation techniques that will generate added value.

The project design has also been informed by The GEF and World Bank project “Integrated Marine and Coastal Resource Management” which aimed at promoting a sustainable management of coastal and marine resources through:

- an ecosystem approach to conservation;
- involving local communities and resource users, including building on local knowledge;
- strengthening local and national institutional capacity to address environmental issues;
- strengthening inter-institutional, and multiple stakeholder forums;

- and strengthening regional networks for conservation and sustainable use of marine biodiversity.

At a smaller scale, lessons drawn from this project has served especially in designing the components 1 and 3. The territorial user rights fisheries (TURF) agreements approach has been explored for the design of Activity 1.4 (Fish and oyster farms management plan developed).

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

It is important to document and share the lessons learnt from positive experiences resulting from the achievement of the project objectives or the negative ones resulting from these failures. This information is a huge potential to bring crucial knowledge to the design and implementation of strategies enhancing resilience to climate change. To make sure that throughout the project steps, lessons are documented and shared; documentation of lessons learnt will be included in the monitoring-evaluation process. Such approach helps ensure that the project can be reviewed at each stage and the lessons learnt and best practices can be valued in planning the next steps. It also helps record knowledge and enters them into a common reservoir where they can be shared with other stakeholders of the Senegalese coastline and the sub-region.

The process will comprise four major steps:

1. Make an inventory of knowledge: the project managers and the Monitoring-Evaluation Team will collect information through structured or non-structured approaches (interviews and observations) by filling out ‘’lessons learnt’’ cards.
2. Check and summary: the project managers check the accuracy and applicability of knowledge gained in relation with the Monitoring-Evaluation officer. The reports are then forwarded to the project coordinator who will ask experts to determine whether a lesson is specific to a particular component of the project, the entire project or the projects in general.
3. Reporting: the project coordinator will then produce a general report on the lessons learnt for the period under review.
4. Dissemination: the coordinator distributes the report internally (to the steering committee, the project managers and members of the project team) and externally (on the project website and other electronic forums). By the end of the project, a lessons-learning document will be prepared and published.

The project will work with other projects and programmes to disseminate the information with cost-effectiveness.

The achievements planned under the project, mainly with the introduction of technical innovations in the fishing sector through the involvement of the National Aquaculture Agency (ANA) and the replenishment of local essences, could then be capitalized and shared with other islands in the Saloum Estuary. This experience can be extended in villages located in Lower Casamance which have similar landscape and are also faced

with deteriorating living conditions resulting from the depletion of fish stocks, poor environment with aggression of the mangrove and farmland salinization.

Component 3 of the project is designed to document and share all lessons learnt as well as the adaptation strategies identified.

The knowledge management process will be linked to the Monitoring and Evaluation process in order to allow lessons learned to constantly feed into the planning strategy.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project itself results from a forum organized on Dionewar island in May 2009, focusing on its economic and social development and the constraints posed by climate change and its adverse effects. This forum gathered the natives of the island, residents or coming from other cities of Senegal and even The Gambia. This forum was the place to carry out a diagnosis and analysis of key sectors (health, water supply, economic activities, education, environment, sport and culture) and to come up with solutions. An important outcome of this forum has been an action plan including major issues and possible remedial activities. These activities have been later on prioritized by the Association for the Development of Dionewar (ADD), leading to a bank of projects. Combining the “environmental management” and the “social” components, the ADD developed this project idea.

The selection of the project idea was also made through a consultative process at national level. In consultation with the Designated Authority and the National Committee for Climate change (COMNACC), it was agreed to issue an open call for proposals at national level in order to identify the second proposal from Senegal to submit to the Adaptation Fund. The reasoning underlying such decision was to ensure fairness, transparency and competiveness. An evaluation committee was then set up, co-chaired by the designated authority and the Chair of the COMNACC. This committee included representatives from various sectors: agriculture, environment, livestock, fisheries, universities, etc. This process led to the selection of this project idea submitted by CONAF-ADD (National Committee for Literacy and Training and Association for the Development of Dionewar) on behalf of communities in Dionewar.

After this selection, many working sessions were organized with the project initiators to further discuss the issues, objectives, outcomes, etc.

Several consultations were also organized at various levels with other categories of stakeholders: project sponsors, local elected representatives, women oyster farmers and processors, women rice farmers, fishermen, the civil society, technical services, communities, customary and religious authorities, etc. These consultations have ensured that their concerns and opinions about the project are captured and taken into

account in the design of the activities. This was successful in securing a strong support from these stakeholders, as shown by a letter to that effect from the Mayor of Dionewar expressing clearly its willingness to participate in the proposed activities.

Meeting with the community

Field missions were organized with aim to identifying aquaculture potentials in the Dionewar village with the aim of exploring the sites due to host the aquaculture infrastructures, but also to better investigate the relevancy of the protection measures considered in the project. Some of these missions included two civil engineers and a resource-person who has a great experience in coastal management. The technical design of these measures was discussed extensively, as well as cost-related aspects.

The outcomes of these meetings and visits were captured in the design and planning of the project activities. For instance, the initial option as regard to tree planting (Activity 1.2) was to do it in forests areas using species like coconut tree, palm tree, etc. After discussion with the communities, it deemed more appropriate to plant trees in selected sites located directly opposite the inlet and highly exposed to coastal erosion. Setting up an “access restricted forest area” (“zone mise en défens”) was the preferred option in order to foster natural regeneration in forest areas. When it comes to the rehabilitation of the dikes (Activity 2.1) to address flooding, the populations suggested the extension of one of the two dikes in order to ensure optimum efficiency. To take this into account the discussions between the populations and the experts (civil engineers) led to the conclusion that to make this extension feasible within the planned budget, the populations will provide the workforce while the project provides the inputs and the technical backing. The populations also suggested to consider raising the height of the dikes and to include spillways in order to allow controlling the flow of rain water and sea water. All these concerns have been taken into account, leading to revising the budget planned initially for this activity.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

The USD 1,256,983 budget requested for this project is justified by the severity of the problems posed by coastal erosion, flooding and land salinization to populations in the Saloum Islands and the Senegalese State. These phenomena weigh heavily on populations' sustainable livelihoods and security and are a major concern for national and local authorities.

The resources used through the various components of the project will help reduce constraints and obstacles and build assets so as to make productive sectors resilient to climate and natural risks.

Benefits generated for direct beneficiaries include an increase in incomes for more than 500 persons (most of whom are women). This increase in incomes will impact the living conditions of a large part of the community because women generally provide school fees, clothing and medicines.

Projects resources will also help improving food security for approximately 5 600 persons through the revival of rice, fish and seafood productions. The rehabilitation of mangroves ecosystems will also contribute to an increase of seafood products while the planting of coconut and oil palm trees will contribute to diversifying and developing local productions which, in turn, will generate incomes for hundreds of people and reduce expenditures on food products.

The central Government and the local Government will also draw concrete benefits from the project's investments as the construction and rehabilitation of protection facilities will limit spending for emergencies, including flooding and tidal waves. This will allow not only to securing Government's equipment investments, but also mobilizing more resources for other priority sectors.

Ultimately the Adaptation Fund resources will generate significant benefits at different levels and for various actors, justifying investments made.

Component 1: Enhancing resilience for productive sectors in Dionewar Island

Baseline scenario:

Populations in the Saloum Islands derive most of their sustainable livelihoods from fishing, agriculture and exploitation of forest products. With the rising sea level and the deterioration of weather conditions (rainfall and temperatures), these populations are at risk of several hazards such as farmland salinization, mangrove regression due to silting and salinity.

Populations have taken several initiatives to cope with these disruptions namely the construction of rudimentary protection dike, the establishment of natural resource management committees, etc. The Senegalese State has also responded several times during serious flooding that caused the breakdown of the protection dikes to assist

populations. However all these interventions had mixed success and were limited in time for lack of financial resources and particularly of technical resources to meet the challenges.

Mangrove reforestation requires a smart choice of suitable species easy to transplant, but also a good knowledge of techniques for the transport, storage and, transplanting of seedlings. The choice of the most suitable for transplanting is also a key element to increase the rate of success of reforestation activities. On aquaculture, weaknesses in the organization and regulation of the operation compromise the resource sustainability.

Adaptation alternative:

The 'adaptation alternative' to be implemented through this project under Component 1 builds capacity 'on the ground' at the local level to establish effective approaches and techniques which increase the resilience of vulnerable communities, and of value chains to climate change and climate variability. Component 1 is designed to enhance the resilience of key productive sectors on the Dionewar Island. It builds the capacity of local organizations to support real 'on the ground' impact in order to demonstrate the social and environmental benefits of climate change resilience in a range of local productions systems. Activities build on and partner with a number of important existing initiatives to support the 'additionality' of climate change adaptation in key value chains. The project resources earmarked for this component (150,000 USD) will be used through the revitalization of fish and oyster farming activities, the replenishment of the vegetation, stakeholders' capacity building and product development. Populations will have a good knowledge of the techniques of selection, transport, storage and, transplanting of seedlings but also in the selection of sites for reforestation. The introduction of new production, processing and storage techniques will help generate added value for local productions. The project also seeks to organize beneficiaries around sustainable farming through local regulation and protection of vulnerable areas as well as improved recovery. Ultimately, the activities implemented under component 1 will make it possible to improve the sustainable livelihoods of communities and restore natural capital in the island. They will allow higher production in better quality and reduce pressure on resources currently used in collection situations.

Component 2: Protection against flooding, coastal erosion and salinization in Dionewar

Baseline scenario:

In Dionewar, populations are at high risk of frequent flooding during rainy events of great importance. These floods are a constant threat to homes and socioeconomic infrastructures. The damage they cause weigh heavily on the already scarce financial resources of populations. In addition, the Island in many parts is facing the advance of the sea that is gradually encroaching into the vegetation and farmland located on the

shore, damages the socioeconomic infrastructures and hinders mobility. Populations are powerless to this situation which requires large financial and technical resources.

Adaptation alternative:

The project resources for component 2 (USD 865,000) will contribute to protect housing, socioeconomic infrastructures (highschool, health centre, infrastructure and housing), the vegetation cover and croplands against water and salinity. The living conditions of populations will be improved and sustainable livelihoods enhanced. People will be trained and involved in the construction of works. They will also be organized to perform simplest tasks of maintenance.

Component 3: Strategic Planning and knowledge management

Baseline scenario:
For instance, none of the Local Development Plans (PLD) in Dionewar includes strategies, activities and/or options that tackle future climate change. As it appears, when preparing these plans, the council did not have the information and the tools needed to integrate climate change concerns into these plans. Therefore, support for mainstreaming climate change within PDCs is needed.
Furthermore, communities are well organized through existing communities groups but any local convention exist for the regulation of natural resources uses.
Finally, the interventions of various stakeholders to address the adverse effects of climate change generate useful knowledge but these are rarely documented and shared. In addition, these interventions rarely provide for sustainability measures. Very often, lessons learnt from the implementation of these interventions are lost at project completion.

Adaptation alternative:

With the resources (USD 43,000) mobilized for component 3, the project will provide support for equitable and sustainable use of project's access and sustainable use of natural resources. Local development plan will be updated to integrate climate changes options and costs benefits and local convention on the sustainable use of natural resources established. Lessons learned will be shared to enable replication.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.

The project is designed so that its outcomes are sustainable beyond its life.

Generally, the project will take an adaptation approach based on sustainable livelihoods by building the basis of human, natural, physical and financial assets. The human capital will be enhanced with improved access to knowledge and know-how. Component 1 includes capacity building activities for recipients.

The Federation of Women's Promotion Groups (GPF) has a strong experience in organization and management of common equipment, acquired through the intervention of various partners. They will be the main beneficiaries of activities implemented under Component 1, and will be responsible for sustaining the gains and profit sharing. Members of the GPF will be trained for optimal resource management. For equipment maintenance, an amount is paid in a bank account after each sale. Establishment of such mechanism will be facilitated by women's experience through the management of the mutual savings and credit Fund they have created. In the past, they developed their own community projects such as building a school for the village, or the introduction of a loan scheme to members who repay at a very low interest rate. In this way they are able to gradually increase their capital.

Through their involvement in Component 2 activities, the population will also gain new capabilities for the maintenance of the realizations, and potentially their extension.

While the natural capital is developed through adaptation measures based on ecosystems such as reforestations, the physical capital is strengthened through coastal protection. All these capitals will contribute to enhance the financial asset of fishermen and women transformers contributing to improve the adaptive capacities both in households and the community. The combined effects of the 3 components will ensure the sustainability of outcomes in the long run.

Furthermore, the projects M&E system includes the development at an early stage of a sustainability/exit plan which will be the main strategy to ensure the sustainability of the project achievements.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

Analysis of risks

Compliance with the Law

Though designed to address the adverse effects of climate change and climate variability and to build resilience, the activities planned under components 1 and 2 might generate some negative impacts for the natural ecosystems and the communities.

There are a regulatory regime and development strategies relating to mitigating such risks:

- Law N° 2001-01 of 15 January 2001 (Environment Code)
- Law N° 86-4 of 24 January 1984 (Hunting and Nature Protection Code) ;
- Law N° 81-13 of 4 March 1981 (Water Code) which provides provide for preventing water pollution and requirements in terms of securing drinking water

supply and public health, agriculture, biological life of receptor medium, fish fauna…;

- Land legislation: the most relevant section with regard to the project activities are:
    - Land Act N° 64-46 of 17 June 1964 pertaining to the National Domain and creates spaces that are not likely to be owned ;
    - Law N° 76-66 of 2 July 1976 (State Domain Code) which organize the public domain and the private domain;
    - Law N°96-06 of 22 March 1996 (Local Government Code) and Law N°96-07 of 22 March 1996 related to transfer of powers to Local Governments, as well as the Decret N°96-1134 of 27 December 1996 deifning the powers of the Local Government for managing the environment in its territory.

Access and equity

The revival of rice cultivation will include activities in Ndimsane Island which is a satellite island of Dionewar. The re-launch of rice growing activity could be source of conflicts, if appropriate measures are not identified and implemented.

Marginalized and vulnerable group

The project perfectly includes vulnerable groups (especially women) in its approach. Activities such as arches and oyster collection or processing of fish product are exclusively dedicated to them. But they are also associated with the implementation of other components such as tree planting and rice cultivation. However, they could face constraints related to husbands permission that men could use as a mean to control part of their improved incomes.

The baseline studies and Project Benefit Assessment will include identification of impact on marginalized and vulnerable groups

Gender Equity and Women's Empowerment

Women are involved in all project components. Even better several components such as the collection of arches and oyster or processing of fish products are specially dedicated to them while they will get a quota to plant trees like oil palms or the *Detarium senegalensis*. In some components such as processing of fish products they will benefit from capacity building in dedicated techniques. The environmental monitoring of the project will ensure compliance with these provisions. However, there is a risk for these actors to lose control on part of their improved incomes.

The project should comply with the principles of the National Strategy for Gender Equality in this regard.

Core labour rights

Modalities for the project implementation eliminate constraint in its implementation. Populations freely organized to propose the project which they believe is relevant to the economic and social development of their community. This is reflected in the project document which advocates for sharing of benefits generated by the project. Moreover, payments for the work done under this project will be made in strict compliance with the current national standards (Labour Code).

Indigenous people

The population of the Dionewar islands consists mainly of the same ethnic group (sere niominka) and a well-established social rule is respect and equity. Therefore, there is no risk related to indigenous people for this project.

Involuntary Resettlement

The project activities do not require the displacement of any community and hence issue of resettlement does not arise.

Protection of natural habitats

The project is planning to rehabilitate natural habitats, namely the mangroves and the forests.
Component 2 of the project includes a ‘’mangrove planting’’ component which is a vital ecosystem in the reproduction and development of some species of fish and shellfish. That is the favorite habitat for arches and oysters that will be utilized by the project. The tree planting activity is therefore crucial at a time when the mangrove is facing degradation factors such as salinity and deforestation for various purposes. Similarly, the planting of typical species of the Island like oil palm, coconut tree or “ditakh’’ (*Detarium senegalensis*) will contribute to restore vegetation on the site.

Conservation of Biological Diversity

The project area of intervention, the Saloum Delta has been classified as biosphere reserve (RBDS) since 1981 by UNESCO and a site of international importance since 1984 by the RAMSAR Convention. This biosphere reserve covers an area of 334,000 ha. In addition, the Saloum Delta has 9 protected forests, a natural park (National National of the Saloum Delta), a Marine Protected Area (Bamboung) and community natural reserves (Mansarinko, Missira, Nema Bah, Same Saroundia, Ndinderling, Baria Valley). A second Marine Protected Area in Sangomar is under preparation and will include the communes of Dionewar and Palmarin and cover an area of 87.437 ha.

Regarding tree planting as well as fish and oyster farming, only local species will be used. However, equipment used in activities under components 1 and 2 could generate some negative impacts for the marine biodiversity.

An assessment of possible impacts will be conducted and mitigation measures will be identified and implemented if there is any risk for the biological diversity.

Climate Change

The island nature of the area of intervention under the project makes it particularly at risk of rising sea level, one of the major consequences of climate change (increased temperature). The findings of templates taking into account the full range of the 35 scenarios forecast an average increase from 0.09 m to 0.88 m of the sea level between 1990 and 2100 (IPCC, 2001). In this context, the project will make sure to reduce greenhouse gas emissions. This is reflected in the "tree planting'' component that can contribute to carbon sequestration. At the same time, the development of rice fields will almost not cause logging given the low rate of recovery on the site.

Pollution Prevention and Resource Efficiency

Some activities under the project such as processing of fish products or rice cultivation can be sources of water and soil pollution. The processing of fish products can generate solid and liquid waste while rice cultivation could use fertilizers that will be thrown through drainage waters. The Environmental and Social Risk Management Plan will suggest the development of plans to manage waste and drainage waters so as to mitigate site contamination. At the same t time, the use of herbicides in rice cultivation will not be promoted.

The project looks for higher resources efficiency for better management of available natural resources like fish species, plantation species (locally available), etc.

Public health

In the ''dike construction'' component, the possible and extended presence of workers can foster contact with local populations and cause outbreak of sexually transmitted infections, including HIV/AIDS. It may be the same for the construction of pirogues and banners for garlands for aquaculture.

Physical and cultural heritage

Shellfish beds are a cultural heritage in the Island and often associated with the presence of baobabs symbolizing former life on the site. Baobabs are also linked to necropolis frequently mounted on shellfish beds. These huge trees often mark sacred places such as the Griot baobab found in Dioron Boumak.

The gravesite baobab which was a funerary practice has been reported only in the centre-western part of Senegal among the Sereres

In its implementation, the project will make sure not to prejudice the integrity of this heritage.

Land and soil conservation

Waste from processed fish products can contribute to land and soil degradation if poorly managed. The same for fertilizers to be used in rice cultivation as well as in the preparation of rice plots which can destroy soil and foster salt upriver.

Coastal erosion is a reality on the coast namely upstream the coast Arrow protecting the commune. The construction of a protection structure here should not transfer the phenomenon to another part.

Checklist of environmental and social principles	**No further assessment required for compliance**	**Potential impacts and risks – further assessment and management required for compliance**
Compliance with the Law		Potential risks: - Contamination of the site by construction equipment; - Increased pressure on resources following capacity building - Changes in drainage patterns Requirement: Environmental and Social Impact Assessment
Access and Equity		Potential risk : - Conflicts on sharing of benefits from revival of productive sectors Requirement: - Environmental and Social Impact Assessment
Marginalized and Vulnerable Groups	.	Potential risk: - Loss of control on part of their improved incomes (women oyster farmers or rice growers) Requirement: - Baseline studies and Project Benefit Assessment
Human Rights	No violation of human rights is foreseen through the project implementation.	None
Gender Equity and Women's Empowerment		Potential risk: - Loss of control on part of their improved incomes (women oyster farmers or rice growers) Requirement: - Baseline studies and Project Benefit Assessment - Environmental and Social Impact Assessment
Core Labour Rights	No risk identified with regard to labour rights. Human investments will	None

	be used as a contribution of the beneficiaries for the building of the dikes. This will also allow them receiving required capacities for the maintenance of the facilities after project completion.	
Indigenous Peoples	Not relevant for this project	None
Involuntary Resettlement	Not relevant for this project	None
Protection of Natural Habitats	The project activities comply with the requirement in terms of protection of the natural habitats.	None
Conservation of Biological Diversity		Potential risks: - Solid and liquid waste generated by the processing of fishery products and fertilizers that could be used in rice cultivation may be thrown through drainage waters and be harmful to the biodiversity. - Poor management of fish and oyster farms could also lead to toxic runoff, introduction of diseased species into populations - Excess of food and waste may influence population densities or stressed out fish. Requirement: Environmental and Social Impact Assessment
Climate Change	The project activities comply with the requirements as regards climate change	None
Pollution Prevention and Resource Efficiency		Potential risks: - Solid and liquid waste generated by the processing of fishery products and fertilizers that could be used in rice cultivation may be thrown through drainage waters. Requirement: Environmental and Social Impact Assessment
Public Health		Potential risks : - Outbreak of sexually transmitted infections, including HIV/AIDS Requirement: Sensitization of workers and populations (through the environmental and social management plan)
Physical and Cultural Heritage	In its implementation, the project will make sure not to prejudice the integrity of this heritage.	None
Lands and Soil Conservation		Potential risks - waste from processed fish products can contribute to land and soil degradation if poorly managed

		- fertilizers to be used in rice cultivation as well as in the preparation of rice plots can destroy soil and foster salt upriver - transfer of the coastal erosion phenomenon to other parts. Requirement: - the waste management plan proposed by the ESIMP will help limit possible soil contamination - the feasibility study will ensure that the nature of the structure will allow avoiding to foster gullying in other sites

Possible actions envisaged to manage risks

With regard to compliance with the regulatory frameworks, there is a need for the project to enforce the relevant provisions provided by the regulations and strategies.

Pursuant to the Senegalese Environmental Code, the project will undergo environmental evaluation so as to have a compliance certificate for its implementation in compliance with the environment. The type of environmental and social evaluation to be conducted is defined in Annex of the same Code depending on the magnitude of potential impacts. As the project includes several parts per component, several environmental studies may be necessary.

The project will also comply with other legal texts such as the Mining Code to request for instance clearance to open careers for the needs to construct infrastructures (dikes, basins, etc.). The Forest Code will support the project activities on tree planting namely with regards to implementation and evaluation techniques and standards. The project will also comply with the Fisheries Code governing the modalities for capture and resource management: the equipment used for aquaculture development shall be certified by the competent services of the Ministry of Fisheries.

At the international level, the Convention on biodiversity will be invoked to bolster the efforts for the conservation of species on the Island while the Convention on Persistent Organic Pollutants will be in force to monitor the possible use of and management of chemicals in aquaculture and rice cultivation.

The initial environmental and social impacts assessment will help better identify risks for biodiversity and the appropriate mitigation measures. An environmental and social management plan will be developed in this regard, when required.

If relevant, the environmental and social management plan could suggest the development of plans to manage waste and drainage waters so as to mitigate possible site contamination. At the same time, the use of herbicides in rice cultivation will not be promoted.

The population and workers will be systematically sensitized on health risks, mainly HIV/AIDS related risks.

To anticipate potential land tenure related issues, a "cadastral map" for rice-growing areas will be developed. This will help clarify the land status before any intervention and will guide the distribution of lands at the end of the realizations.

The nature of the structures to protect from coastal erosion was carefully chosen likewise for structures protecting against upwelling in Colbassy, for example, to avoid fostering erosion in other sites.

CSE's Environmental and Social Policy and the Adaptation Fund's Environmental and Social Policy will be made available to project stakeholders and promoted through training and dialogue with implementing agencies to build a common understanding of the principles and practices that have been adopted to enhance development benefits and avoid unnecessary harm to the environment and affected communities.

Categorization

In view of the above, the project is categorized as "Category 2" of the Environment Code of Senegal, which means that it has limited impacts on the environment or the impacts can be mitigated by implementing measures or changes in its development. This category is subject to an initial environmental and social assessment.

With regard to the Adaptation Fund AF categorization, the project can be categorized as Category B, meaning that it has potential adverse impacts, but in small number and scale, not widespread and easily mitigated.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[2] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Mrs. Ndeye Fatou Diaw Guene *Designated National Authority for the Adaptation Fund* *Technical Advisor* *Directorate of Environment and Classified Establishments* *Ministry of Environment and Sustainable Development*	Date: *02/03/2015* 

[6] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (Senegalese National Adaptation programmes of Actions on climate change; Senegalese National Climate Change Adaptation Strategy; National Strategy for Economic and Social Development; Senegalese Five-year Agricultural Programme; Emerging Senegal Plan) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.
Dr Assize Touré *General Manager* *Centre de Suivi Ecologique* *Implementing Entity Coordinator* 
Date: *02/03/2015* — Tel. and email: +221 338258066 assize@cse.sn
Project Contact Person: Dethie Soumare NDIAYE
Tel. and Email: dethie@cse.sn

ADAPTATION FUND

REPUBLIQUE DU SENEGAL N° 2 2 9 6 **MEDD/ DEEC. AND AF**

Un Peuple - Un But - Une Foi

MINISTERE DE L'ENVIRONNEMENT ET DU DEVELOPPEMENT DURABLE

Direction de l'Environnement et des Etablissements classés

12 August 2015

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for Reducing vulnerability and increasing resilience of coastal communities in the Saloum Islands (Dionewar)

In my capacity as designated authority for the Adaptation Fund in Senegal, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Senegal.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by "Centre de Suivi Ecologique (CSE)" and executed by "Comité National pour l'Alphabétisation et la Formation (CONAF), Agence Nationale pour l'Aquaculture (ANA)".

Sincerely,

Direction de l'Environnement et des Etablissements Classés
D.E.E.C

Mrs. Ndèye Fatou Diaw GUENE

Designated National Autority for the Adaptation Fund
Technical Advisor
Directorate of Environment and Classified Establishments

REPUPLIQUE DU SENEGAL

REGION DE FATICK

DEPARTEMENT DE FOUNDIOUGNE

ARRONDISSEMENT DE NIODIOR

COMMUNE DE DIONEWAR

Dionewar, le 15 Avril 2015

A Monsieur le Président de l'Association pour le Développement de Dionewar (ADD)

Objet: lettre d'appui au projet « **Reducing vulnerability and increasing resilence of coastal communities in the Saloum Islands (Dionewar and Falia ».**

Monsieur,

Nous saluons les multiples réalisations de l'Association pour le Développement de Dionewar – ADD - en matière de santé, d'hydraulique, d'éducation, de renforcement de capacités … etc., au profit des populations de Dionewar et cela en appui aux actions louables de l'Etat du Sénégal.

Sur le plan de l'environnement, le village de Dionewar ne cesse de voir ses ressources naturelles et son environnement se détériorer : les forêts naturelles, les sols, les ressources en eau, les ressources halieutiques, le cadre de vie…etc.

En plus des facteurs naturels (sécheresse et érosion côtière), on peut noter la forte poussée démographique, l'analphabétisme et la paupérisation de larges couches sociales qui sont des facteurs explicatifs de cette dégradation des ressources naturelles et de l'environnement.

Pour ces raisons nous encourageons vivement l'initiative portant projet « **Reducing vulnerability and increasing resilence of coastal communities in the Saloum Islands ».**

Nous nous félicitons de votre démarche participative depuis l'organisation du Forum de Dionewar les 30 et 31 Mai 2009 où le Conseil Rural s'était engagé à s'approprier les conclusions issues de ces assises.

Concernant le projet « **Reducing vulnerability and increasing resilence of coastal communities in the Saloum Islands »** nous avons été pleinement associés aux différentes rencontres avec les partenaires parties prenantes. Ainsi, les séances de travail lors des missions CSE – CONAF – ADD des 30 aout au 1er Septembre 2013 et des 13 au 16 Janvier 2015, de même que les rencontres lors de la mission CSE – ANA – CONAF – ADD des 6 au 9 Décembre 2013 ont permis de nous convaincre de la pertinence du projet et de son impact potentiel pour la collectivité entière.

Nous sommes convaincus que la préservation de l'environnement et la gestion des ressources naturelles sont des conditions fondamentales d'un développement humain durable. Pour cette raison nous nous engageons à apporter notre appui à la mise en œuvre du projet **« Reducing vulnerability and increasing resilence of coastal communities in the Saloum Islands »**par la mise à disposition des services techniques de la commune de Dionewar.

Je vous prie d'agréer Monsieur le Président, l'expression de notre très haute considération.

REPUBLIQUE DU SENEGAL
Le Maire
COMMUNE DE DIONEWAR

Le Maire