

## **PART I: PROJECT/PROGRAMME INFORMATION**

PROJECT/PROGRAMME CATEGORY: COASTAL EROSION

COUNTRY/IES: SENEGAL

TITLE OF PROGRAMME: **ADAPTATION TO COASTAL EROSION IN VULNERABLE AREAS**

TYPE OF IMPLEMENTING ENTITY: NATIONAL

IMPLEMENTING ENTITY: **CENTRE DE SUIVI ECOLOGIQUE**

EXECUTING ENTITY (IES): **DEEC (DIRECTORATE OF ENVIRONMENT OF SENEGAL), NGO, AND COMMUNITY ASSOCIATIONS**

REQUESTED FUNDING: **US\$8,619,000** (Equivalent)

### **PROJECT / PROGRAMME BACKGROUND AND CONTEXT:**

#### **I. SITUATION ANALYSIS**

1. Senegal's growth and economic development will be hampered by climate change, unless appropriate adaptation initiatives, guided by an adaptation strategy are implemented, and Climate change (CC) incorporated into the core of the development process. It is suggested that climate change is reflected in a sea-level rise, decreasing rainfall (with a heightened intensity of exceptional events) and high temperatures in Senegal. The major problem facing Senegal is that its leading economic sectors are totally dependent on natural resources, which are being currently depleted by people's basic activities, and will be threatened by the upcoming climate change. The key activities contributing to the formation of the GDP in Senegal are agriculture (14.7 per cent), industry (22.1 per cent) and services (63.2 per cent)<sup>1</sup>. Agriculture, fishing, and tourism in particular, help maintain people's livelihoods by creating jobs and generating income. Senegal's heavy dependence on natural resources, which could be seriously affected by climate change, is a threat to economic growth and to Senegal's development goals.
2. The most vulnerable Senegalese citizens to the effects of future climate change include poor people in rural areas, women, the elderly, farmers, fishermen, market gardeners, and tourist operators. Women are responsible for the maintenance of their families' means of subsistence and constitute the major workforce in rural economies, especially in agriculture and fishing. Subsequently, it is likely that climate change will have serious consequences, in terms of poverty reduction, gender-related issues, and the attainment of the MDGs. Hence, relying on the needs of the most vulnerable communities is essential to match human development to the responses to climate change.
3. On the entire Senegalese coasts and for a 1-meter rise of the sea level by 2100, Dennis et al. (1995) predict that between 55 and 86 square kilometres of beach will disappear, due to an intensification of coastal erosion phenomena. Concurrently, some 6,000 square kilometres of low areas, notably the estuaries would be flooded. Likewise, with a rise of 40 to 120 cm, coastal facilities and human settlements could suffer heavy damage. Besides, traditional rice-

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(i) <sup>1</sup> Senegal at first sight, 2008. World Bank.

growing activities carried out in valleys and estuarial areas will be affected by a larger intrusion of saline waters, making the drainage of those areas even more difficult. The table below shows some of the climate change-related threats and consequences.

| SECTOR               | CC-RELATED THREATS   | CONSEQUENCES   |
|----------------------|--|--|
| <b>COASTAL AREAS</b> | Sea-level rise<br>Increase in swell height<br>Warming up of ocean waters<br>Modification of upwellings | Increasing coastal erosion<br>Flooding of low coastal areas<br>Water and soil salination<br>Disappearance of farming lands<br>Risks to lose the mangrove swamps<br>Modification of the structure and composition of marine species (fish and seabirds)<br>Development of toxic agents in marine animals<br>Modification of the structure and composition of underground marine species |

Coastal flooding and erosion are the main causes of the loss of physical and financial assets, especially the loss of land along the coast.

Among others, the consequences related to coastal erosion include:

- The destruction of economic infrastructures and human settlements,
- The silting-up of access channels, the formation of sand bars, and the isolation of the Djiffere and Dionewar Islands,
- The destruction of rows of beefwood (Langue de Barbarie),
- The breaking of the Sangomar 'Arrow' that led to a series of consequences, notably the destruction of the mangrove swamp, the destruction of some infrastructures and the salination of soil in some island villages facing the new mouth, and the flooding of the areas near the River.

4. Senegal is particularly vulnerable to climate change, due to the existence of a farming sector, which heavily depends on the climate, a high population density and the concentration of almost all economic on coastal areas.
5. Senegal's National Adaptation Plan of Action (NAPA) (2006) gives the details of the country's priority adaptation responses, which include: reforestation, the restoration of the mangrove swamp, the biological stabilization of sand dunes, the physical protection against beach erosion and saline intrusion (using ditches, barriers or other protection means), irrigation projects, the restoration of soil fertility, water conservation methods, the use of alternative crops, and education on adaptation.
6. There are many small-scale projects, which address local problems related to the effects of current patterns of climate variability, with a few examples, such as reforestation (Diaw, 2006), irrigation, soil restoration and construction of dikes (Adams, 1993), irrigation and

mangrove restoration (Denkelman et al., 2008), risk and disaster managements plans in response to floods in urban areas (Mbow et al., 2009). Other ongoing adaptation projects deal with both current and upcoming climate, but many of them are limited to the short term and are being implemented on an ad hoc basis. There are other examples of integrated approaches of climate change in the sub-region, such as the project called “Adaptation to Climate Change - Responding to Climate Change and to its human dimensions in West Africa through the integrated management of the coastal area” (ACCC) and the Climate Change and Development Adapting by Reducing Vulnerability (CC DARE) Project. There are also programmes, NGOs, and research institutes in Senegal, which are devoted to improving adaptation capacities and increasing adaptation networks (sharing and apprenticeship) such as: INFOCLIM, CONGAD, and ISRA. Other development organisations and agencies, such as the Japanese International Cooperation International Agency (JICA) and the UNDP, working in areas that could benefit from the synergy of adaptation actions, such as the agricultural and health sectors.

7. The response proposed through this programme will focus on the effective implementation of adaptation measures to climate change in some vulnerable coastal areas previously identified, such as Rufisque, Saly, and Joal (Figure 1).

## ■ PROJECT / PROGRAMME OBJECTIVES:

### **The Overall Objective of the Programme:**

The programme’s overall objective is to contribute to the implementation of Senegal’s National Adaptation Plan of Action on Climate Change (NAPA).

### **Specific Objectives (SO):**

- **SO1:** Implement the actions to protect the coastal areas of Rufisque, Saly, and Joal against erosion, with the aim to protect houses and the economic infrastructures threatened by the erosion including fish processing areas, fishing docks, tourism or cultural infrastructures, and restore lost or threatened activities;
- **SO2 :** Implement the actions to fight the salinization of agricultural lands used to grow rice in Joal, with the construction of anti-salt dikes;
- **SO3 :** Assist local communities of the coastal area of Joal, especially women, in handling fish processing areas of the districts located along the littoral and to conduct awareness programme and training related to adaptation and its adverse effects ;
- **SO4 :** Communicate on the adaptation, sensitize and train local people on climate change adaptation techniques in coastal areas and on good practices, to avoid an aggravation of the various situations encountered;
- **SO5:** Develop and implement the appropriate regulations for the management of coastal areas.

**Expected Results:**

- **Result 1:** The populations, houses, economic and cultural infrastructures in the coastal areas in Rufisque, Saly, and Joal are protected against erosion;
- **Result 2:** The lands of the rice-growing areas and others agricultural crops in Joal are protected against salinization and agricultural activities are restored;
- **Result 3:** The population in the coastal area of Joal, through the Town Council, have set up a rational and effective waste management system ; the fish processing areas are renovated, with a strong involvement of women ;
- **Result 4:** The people are aware of the climatic risks ; they need to be sensitized and informed on the adaptation techniques to climate change in coastal areas;
- **Result 5:** The appropriate regulation is developed, adapted, and implemented for rational management of coastal areas.

**The Programme's Intervention Areas:**

The Programme encompasses the areas of Rufisque, Saly, and Joal.

■ **PROJECT / PROGRAMME COMPONENTS AND FINANCING:**

| Domaine/Zone  | Programme Components   | EXPECTED RESULTS   | RESULTS   | Amount (x 1000 US\$) |  |
|---------------|--|--|---|----------------------|--|
| 1. Rufisque : | a. Validation of the feasibility studies of Thiawlene and Diokoul  | <i>Action 1.1: Update the detailed technical feasibility studies for the design of coastal protection facilities in the areas of Rufisque,</i>                   | <b>Result 1:</b> People, houses, economic and cultural infrastructures in the areas of Rufisque are protected against coastal erosion. The populations are involved | 35                   | 2535<br>Including travel and workshops |
|               | b. Achievement of the infrastructure of protection   | <i>Action 1.2 : Achievement of the infrastructure of protection</i>  |   | 2 350                |  |
|               | c. Cleaning up of the canals and connection with the sea <sup>2</sup> (with a strong involvement of local populations) | <i>Action 1.3: Cleaning up of the canals and connection with the sea</i>   |   | 150                  |  |
| 2. Saly:      | a. Achievement of the infrastructure of protection in Saly   | <i>Action 1.2: Update the detailed technical feasibility studies for the design of coastal protection facilities in the areas of Saly</i>                        | <b>Result 2:</b> People, houses, economic and cultural infrastructures in the area of Saly are protected against coastal erosion. Local people are involved         | 80                   | 2730<br>Including travel and workshops |
|               |  | <i>Action 2.2 : setting up of the protection facilities in the vulnerable areas covering the hotels, people, and poor villages, as well as the fishing docks</i> |   | 2 250                |  |
|               | b. Support for the fitting-out of the fishing dock and the fish processing area  | <i>Action 2.3 : Support for the fitting-out of the fishing dock and the fish processing area</i>   |   | 400                  |  |
| 3. Joal :     | a. Validation of the feasibility studies and achievement of the anti-salt barrier                                      | <i>Action 3.1 : Update and validation of the detailed technical feasibility studies for the design of the anti-salt dikes in the rice-growing areas</i>          | <b>Result 3:</b> Rice-growing areas in Joal are protected against salinization. The coastal infrastructure is   | 700                  | 1950<br>Including travel and workshops |

(ii) <sup>2</sup> The clearing out of the discharge canals of surface water is significant to set up a long lasting coastal protection infrastructure by avoiding any water stagnation around the dike.

|   |   |  |   |     |  |
|---|---|--|---|-----|--|
|   |   | <b>Action 3.2: Build anti-salt dikes in the rice-growing areas</b>   | <p>built for the processing activities</p> <p>Environmental Impact Assessment studies are conducted and the implementation of the Environmental and Social Management Plan is monitored.</p> <p>Local population, mainly women, are sensitized and trained.</p>         | 900 |  |
|   | <b>b. Strengthening of the protection and development of the littoral: beach, fish smoke kilns,</b>   | <b>Action 3.3 : Protect and layout beaches and fish processing areas.</b>  |   | 300 |  |
|   | <b>c. Strengthening environmental assessment awarness and training (Information, Education and communication).</b>  | <b>Action 3.4 : Women awareness and training in environmental management</b>   |   | 50  |  |
| <b>4. Regulations :</b>                                       | <b>a. Development, strengthening, and implementation of the regulation on coastal protection and the adaptation to climate change: Environmental Code, law on the littoral and other regulations[3] ...</b> | <b>Action 4.1 : Design, fine tune, and strengthen the regulations on the management of the littoral : Environmental Code, the law on the littoral, and other codes</b> | <p><b>Result 4:</b> Regulations exist and cover all areas. The environment code is revised; the law on the littoral is adopted. These two documents take into account the Climate Change CC) dimension. A good communication effort is made to explain those texts.</p> | 120 | <b>220</b><br>Including travel and workshops |
|   | <b>b. Communication on those regulations</b>  | <b>Action 4.2: Regulations, with a strong communication component</b>  |   | 100 |  |
| <b>5. Information/Sensitization/ Training /Communication:</b> | <b>a. Information and sensitization on the programme</b>  | <b>Action 5.1 : Design and implement a sensitization programme for local people on new adaptation to climate change in coastal areas.</b>                              | <p><b>Result 5:</b> Local people are sensitized and informed about the adaptation techniques to climate change in coastal areas and about the respect of the regulations on the management of the littoral.</p>   | 240 | <b>415</b><br>Including travel and workshops |
|   | <b>b. Training of the various target groups on the new regulations and adaptation,</b>  | <b>Action 5.2 : Design and implement a training programme for local people on new adaptation to climate change in coastal areas</b>                                    |   | 100 |  |

|   |   |  |  |              |  |
|---|---|--|--|--------------|--|
|   | <i>c. Development of communication tools, distributions and exchanges</i> | <i>Action 5.3: Design develop and distributions the adequate communication tools .</i>         |  | 75           |  |
| <b>6. Follow-up/Evaluation/Monitoring</b> | <b>6. Follow-up/Evaluation/Monitoring</b>                                 | <b>Action 6.1 :</b> ensure the follow-up and supervision of the activities of the programme.   |  | 160          | <b>350</b><br>It implies the payment of the responsible in charge of the follow-up |
|   |   | <b>Action 6.2 :</b> ensure the evaluation des performances of the programme.                   |  | 90           |  |
|   |   | <b>Action 6.3: ensure control and audit</b> of the activities of the programme.                |  | 100          |  |
| <b>7. Total Project/Programme Cost</b>    |   |  |  | <b>8 200</b> | <b>8 200</b>   |
|   | 8. Programme Cycle Management Fee charged by the Implementing Entity      | Programme Document Formulation /Review (4 consultants, travels, workshops...) to be reimbursed |  | 90           | 90   |
|   |   | Traduction French - English  |  | 4            | 4  |
|   |   | Management fee of the NIE  |  | 325          | 325  |
| <b>Amount of Financing Requested</b>      |   |  |  | <b>8 619</b> | <b>8 619</b>   |

- **PROJECTED CALENDAR:**  
Indicate the dates of the following milestones for the proposed project/programme

| <b>MILESTONES</b>                         | <b>EXPECTED DATES</b> |
|---|-----------------------|
| Start of Project/Programme Implementation | October 2010          |
| Mid-term Review (if planned)              | October 2011          |
| Project/Programme Closing                 | October 2012          |
| Terminal Evaluation                       | September 2012        |

## SECTORS



### 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.**

The development of Senegal's National Adaptation Plan of Action (NAPA, 2006) originates from the vulnerability studies conducted in three sectors, namely water resources, agriculture, and coastal areas. The NAPA has identified a few adaptation options in these sectors, including:

- fight against soil salinity (anti-salt dikes and small dams) for the farming sector;
- building of infrastructures of protection against coastal erosion, as well as the legal and institutional measures and capacity building for all stakeholders in the coastal area sector.

From these selected priority adaptation options, a series of projects has been initiated, taking into account their strong incidence on poverty alleviation efforts, their low costs and their link with the Regional Integrated Development Plans, the national sectoral policy, as well as the strategies defined at the international level.

The activities proposed as part of the present programme perfectly match the adaptation options and would therefore help communities, who are settled in coastal areas, better fight the impact of climate change.

The choosing of those options is motivated by the fact that the coastal erosion phenomena affect almost all large coastal cities of Senegal.

The observed shoreline recession rates of the shoreline vary depending on the situations and processes at stake. On average, one can consider that the recession rate varies between 1 and 2 meters a year for sandy beaches.

In the Saly area, coastal erosion has intensified since 1989, with a shoreline recession of 1 meter per year (CSE, 2004).

In Rufisque, the recession rates vary from one area to another, between 0.9 and 1.4 meters per year (Dieye 2000).

In Joal, Niang et al. (1995) considered this rate was between 1.9 and 3.8 meters per year.

A study conducted in 1990 par by Misdorp *et al.*, had estimated the length of Senegal's coasts at coast 1,350 km, with a total protection coast of US\$1,596 million. By assuming that between Rufisque and Joal, 82 km of coasts are vulnerable, the resources needed for their protection would be up to US\$97 million.



These adaptation options are based on an institutional and legal framework meant to ensure sustainable development.

In fact, several laws pertaining to the management of the coastal area have been adopted, especially:

- the environment code (Law 2001/01 of January 15, 2001)
- the sea fishery code (Law 98-32 of 14 April 1998)
- the urban development code (Law 8113/81 of March 1981)
- the local government code and the law on the transfer of competences, especially in the area of environment, to local governments: (Laws 9606 of 22 March 1996 and 9607 of 22 March 1996)

However, some of those laws are in a revision process (environment code and sea fishery code) taking into account the ecosystem-based and coastal integrated management approaches, the internationalization of international conventions in our positive law, and the emergence of climate change...)

Finally, a law on the coastal area (**coastal act: *loi sur le littoral***) is being finalized, as well as laws on biodiversity and aquaculture. The coastal act includes a variety of existing regulations on the overall management of the marine and coastal environment. It conveys the important provisions of various conventions on the marine environment in our positive law. It ultimately seeks to introduce new more restrictive provisions that can guaranty the effectiveness of the existing rules and strengthen the preservation and development mechanism, in a sustainable development prospect.

Among others merits, Senegal's coastal act deserves credit for:

- facilitating rational management of the coastal land stock;
- a better development of the country's economic potentialities;
- the coastal protection against erosion and the protection of the important sites in terms of biodiversity.

As part of the current programme, a particular emphasis will be put on the popularization and dissemination of the new regulations. At the local level, the programme will be also active in making deliberations, giving directions, and introducing codes of conduct to ensure the sustainability of the project.

**B. Describe how the project/programme provides economic, social, and environmental benefits, with particular reference to the most vulnerable communities.**

The coastal areas are the main development zones of Senegal, with high stakes in terms of the importance of the number of people involved (over 75 per cent of the Senegalese's populations live within less than 60 km from the shore) and the economic weight of those populations. The high human concentration in this coastal portion is explained by the importance of fishing, farming, tourism, and industrial activities.

The protection of the coastal area is a prerogative of the State within its mission of protecting the whole State-owned property. In particular, the State has the obligation to intervene in the sites that have been leased out to private people, as it is the case for hotel infrastructures in Saly; even though interventions from private business may exist and are encouraged.

Owing to the intensity of the coastal erosion phenomenon in the area, with an average erosion speed of about 1meter per year in the Saly area, between 1978 et 2001 (CSE, 2004), the overall coastal area is threatened and is currently under heavy attacks by the sea. Saly concentrates houses, hotels, and most economic activities of the surrounding villages. Thus any action aiming to protect this part of the coast should encompass the whole site; it is not possible to protect one side without the other, this would only compromise the success and the sustainability of the actions.

A partial protection will only accentuate the phenomenon, thus requiring further interventions. It should be noted that the private sector has already initiated some actions under the supervision of the State, but these actions are very localized and if their scale is maintained, they could be detrimental to other areas. This is the reason why, those actions have not been taken further. The next action should be comprehensive and definitive, for all.

Hence, the development plan and the protection scheme are part of a comprehensive strategy which is first based on an environmental impact assessment and a feasibility study. Besides, at the social level, the preservation of hotels and other tourist infrastructures in Saly will perpetuate several jobs. Three thousand (3,000) direct jobs and nine thousand (9,000) others are generated by the development of tourism. The tourist resort of Saly is managed by SAPCO, on behalf of the State, which drew up contracts lease with the private promoters.

Within the fishery communities, the fishing activities are mainly carried out by men. While women do not play a major role in the production, they contribute to the means of production and have a leading role in the distribution of fresh fish and the processing of fishery products. In general, women organize themselves through associations called '*Groupements d'Intérêt Economique*' (Economic Interest Groups, GIE) or in federations making them enough organized and trained to receive assistance from development support institutions. For most of the communities, the access to the basic social services is still limited. Apparent poverty prevails in most of the fishing communities. The houses are piled up, the streets are narrow, a great insalubrity reigns, very few children are sent to school. Some areas are known for their lack of basic infrastructures: poor sewage and waste management systems, lack of power facilities, lack of materials and equipment in health facilities, and in certain cases, these communities have no public rest rooms; therefore the beach is used a lavatory. This situation is exacerbated by the excessive population increase in these communities.

Currently, the macroeconomic situation, the destruction of the farming production systems, and the dwindling of fish resources, reflected by low-yielding fishing activities, due to the excessive pressure on high-quality fish products, have disrupted the economy of the coastal area and exacerbated poverty within those communities. Subsequently, a large portion of the population lives under extremely precarious conditions.

This situation is exacerbated by the impact of the sea-level rise on fishing and farming activities in coastal areas, as a result of climate change, including destruction of fishing docks and fish processing areas, salinization of lands.

The project is meant to help protect the production areas. If those sites are protected, the natural resources will continue to exist and potentially return to their optimal conditions; which will allow activities to resume in good conditions. The continuation of the activities in restored and protected areas will guarantee the success of the project as the residents and/or the private activities can take over.

Although this program (submitted to the Adaptation Fund) do not intend funding economic activities on those sites, it will make safer, protect and sustain the means of productions of the populations. In addition, the program will help the populations to access to the institutions of microfinance, by providing the necessary documents and information, and facilitating the contacts. The microfinance institutions present in this area include PRADESS (Support Programme for Social Development in Senegal) specialized in income-generating activities: petty trade, handicrafts, agriculture (market gardening), food processing, fishing and oyster-farming; MECPROPEM (Credit and Savings Society for the Promotion of Fishing in Mbour); MECDPJ (Credit and Savings Society for the Development of Fishing in Joal); MECPROPARK (Credit and Savings Society for the Promotion of Responsible Traditional Fishing in Kayar); FENAGIE PECHE which has already completed a project called “Plan of Action for the Development small-scale fish processing”, funded by PAOA (Support project for food-processing) and the “Project for the development of seafood processing technologies”, supported by JICA (Japanese International Cooperation Agency); and the National Bank Agricultural Credit Fund (CNCA) whose sectors of intervention include traditional fishing (equipment, working capital for fish processing and marketing), urban and rural trade, and agriculture.

As for farming, the erection of anti-salt barriers in Joal will help recover lands for rice farming and market gardening, which will also help diversify the sources of income.

To reverse the negative trends compounded by the adverse effects climate change, through capacity building actions for the actors of the fishing sector (on regulations texts), the project will insist on fisheries sustainable management, the improvement of fish processing techniques, information and sensitization operations for the stakeholders, using environmental (radio, film) on the benefits of responsible fishing. Sustainable management measures, such as the imposition of biological rest on an annual basis by the technical services of the fishing sector, with a focus on endangered species could be planned

The activities of sensitizing and training will be developed in connection with the local organizations, NGO and associations implied in the project.

In conclusion, the Programme is about ensuring adaptation to climate change in the areas vulnerable to coastal erosion and fighting the salinization of lands, especially through the construction of coastal protection facilities and anti-salt dikes as adaptation measures. The Programme also intends to initiate actions against poverty in coastal areas, notably through assistance to the most vulnerable populations, for the improvement of their income generating activities (fish processing, rice growing, increasing the value of all waste). Finally, by improving

the existing regulatory framework and sensitization, the training of the population living in target coastal areas, the Programme will help boost people's resilience to coastal erosion and salinization of the lands.

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

The Programme operates in Senegal's coastal area, which is a very important area in the country's economy. Actually, Senegal's tourist supply consists exclusively of beach tourism. Since 1991, tourism is the country's second foreign exchange earner, far ahead of the phosphates or groundnuts: it contributes to the improvement of the balance of payments. A breakdown of the receipts from international tourism collected in Senegal reveals that the sectors that benefit the most from tourism are the hotels (71.8 per cent) and craftsmen (12.1 per cent). The tourism industry has created 8.000 direct jobs and about 15,000 indirect jobs.

Senegal's Poverty Reduction Strategy (SRP) has been defined with the goal to halve poverty by 2015 and reduce the people's socioeconomic vulnerability. To that end, the economic and social policies of the government will help put the country on the path to sustainable human development. In that context, different studies have shown that the majority of the poor people (57 per cent) live in rural areas and largely (60 per cent) depend directly on agriculture and fishing. The sole factors of production they possess and they use the most are the land and their workforce. The sole factors of production they possess and use most are the land and their workforce. It ensues from that analysis that a growth in order to be favorable to poor and vulnerable populations should target rural areas, increase farming and fishing productivity while being highly labour-intensive.

The sites of the programme, Saly, Rufisque and Joal are areas of high concentration of fishermen and farmers for whom, the protection of the means of subsistence is a priority of the SRP. Actually, the project in these areas and for these activities is justified by the socioeconomic vulnerability related to those sectors and also to the beneficiaries, for whom, it is necessary to increase and secure incomes.

Furthermore, one of the key objectives of the SRP is to establish a favorable environment for private investments. Those investments will help improve the development of the wealth-creation and will be supported by public investments, to increase the level of social and economic infrastructure. It is in that framework that SAPCO was set up to create the conditions for the development of tourism, whose contribution to the generation of incomes is preponderant. In fact, the tourism sector is one of the key points on which lies the Senegalese Accelerated Growth Strategy.

In addition, hotels owners are involved in a local "station" committee which is used to fund and follow-up a number of activities. Previous protection actions already undertaken under the supervision of the State by the private sector had been decided within this local station committee.

Besides, Senegal makes a significant amount of its hard currencies from the fishing sector, which ranks first in the economy of the nation, with gross receipts estimated at US\$350 million. The number of people making their living from the production, processing, and marketing of fish and

other related activities are estimated at 600,000 in Senegal<sup>3</sup>. Traditional fish processing is an important source of income for women and “helpers”. Earnings vary depending on the production costs, the processors’ business acumen and techniques (DIOP, 1990).

As explained earlier, coastal erosion is a real threat to these two sectors (tourism and fishing), which are the lungs of Senegal’s economy. Consequently, the Programme intends to reduce those threats, which could compromise income-generating activities, by implementing adaptation measures; hence its profitability.

**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.**

Senegal is party to the United Convention Framework Convention on Climate Change, which it ratified in 1994. In 1997, Senegal made a first National Communication on Climate Change; the second is in the process of being finalized. The proposed programme is therefore consistent with the priorities defined in the National Plan of Action for Adaptation (NAPA) and the National Adaptation Strategy to Climate Change in Senegal.

The present programme will be linked to larger programmes, such as NAPA, ACCC Project, the CC DARE and UNDP/Japan Project: “Support for the Implementation of Integrated and Holistic Adaptation Approaches against Climate Change: Integration of the Adaptation to Climate Change in the Sustainable Development of Senegal (PAA/INTAC).”

This will help avoiding the duplication of efforts and will bring synergies between the different projects. The present programme will support the adoption of adaptation measures to curb the vulnerability of Senegal’s coastal areas to coastal erosion and salinization.

The sustainability of the program beyond this phase will rely on the local Communities, NGOs, Associations involvement and appropriation of the process of the program. Thanks to program expected results, the “Local Development Plans” as well as the “Local Conventions”, supported by the “Programme National de Développement Local (PNDL)”, will be improved while integrating and capitalizing these results. In fact, lot of efforts on mainstreaming, integrating climate change to all planning tools will be achieved.

In the same way, what the program is going to develop appears at the level in right line of activities and initiatives regional (Observatory of the UEMOA, activities and programs of the World Bank and the IUCN...). In addition, within the context of decentralization in Senegal since several years, at the level regional, the *Conseil Regional* (Regional Council) and its Technical Agency (Regional Development Agency) will get all the technical and scientific capacities thanks to a strong capacity building component during the programme execution to continue these activities, combining funds coming from various partners and funding agencies

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(iii) <sup>3</sup> SY A. B., SECK I. (2006) Profile of the Post Capture sector of traditional fishing in Senegal. P 10

**E. Describe how the project/programme meets relevant national technical standards, where applicable.**

This proposal has been prepared in accordance with the guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (including Senegalese National Adaptation Plan of Action on Climate Change; Senegalese National Climate Change Adaptation Strategy; Senegalese Poverty Reduction Strategy Paper; Adaption to Climate and Coastal Change in West Africa (ACCC); Climate Change and Development – Adapting by Reducing Vulnerability (CC- DARE); and Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation : Integration of Climate Change Adaptation in Sustainable Development in Senegal (PAA/INTAC)).

The provisions of the law N° 2001-01 of January 15, 2001 related to the Code of Environment and Environment Impact Studies will be fully respected.

A call for tenders defining the technical specifications and the present current standards will be used and respected, just like the project "Coastal Protection of Thiawène (Rufisque) by a Frontal Dike". A Private Company of Control of Works will be committed, following a call for tenders, for the check and certification of the respect of the procedures and technical clauses before reception of the works.

In the framework of the program, all planned activities for the building of infrastructures will be carried out accordingly to international standards and existing manuals, such as the *U.S. Army Corps of Engineers Shore Protection Manual* (1984)) and the *The Rock Manual* (CIRIA, 2007) which are international reference documents in coastal civil engineering.

The envisaged infrastructure of protection proposed is a frontal dam made up of ripraps which can be natural (blocks of rocks) or artificial (concrete blocks standard accropodes).

**Kind of infrastructures planned in Rufisque (Thiawlene)**



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

Table of available or pledged funds

| <b>Designation of the Fund</b> | <b>Amount in US \$</b> | <b>Observations</b>                                  |
|--------------------------------|------------------------|--|
| European Union                 | 5,400,000              | Studies and Implementation                           |
| Adaptation Fund                | 8,200,000              | Multisectoral achievements                           |
| UNDP / Japan                   | 3,000,000              | Institutional strengthening, studies and investments |
| National Budget                | 750,000                | Investments  |
| UEMOA                          | 4,000,000              | Studies and investments                              |
| GEF                            | 473,000                | Reforestation  |
| AfDB(African Development Bank) | Expected               | Studies and investments                              |
| World Bank                     | 500,000                | Studies  |

The table below reviews the situation of the projects underway or to be launched in the field of adaptation of the vulnerability of Senegal's coastal areas to coastal erosion and salinization.

| <b>Actions</b>   | <b>Selected Sites</b>            | <b>Funding</b>   | <b>Amount (FCFA)</b> | <b>Duration</b>               |
|--|----------------------------------|--|----------------------|-------------------------------|
| Studies and building of coastal protection facilities in Thiawlene and Diokoul | Thiawlene and Diokoul (Rufisque) | European Union   | <b>1,180,720,000</b> | 7 months.<br>To start in 2010 |
|  |                                  | UNDP/Japan Project   | <b>249,523,000</b>   |                               |
|  |                                  | BCI  | <b>250,000,000</b>   |                               |
|  |                                  | Remainder of Requested fund attendu du Fonds d' Adaptation | <b>1,559,757,000</b> |                               |
| Studies and construction of protection facilities in Saly                      | Saly (Mbour)                     | UNDP Japan Project   | <b>195,704,000</b>   | To start in 2010              |
|  |                                  | Requested funding (UEMOA, AfDB)                            | <b>5,000,000,000</b> |                               |
| Reforestation of cordons of  | Palmarin (Fatick)                | GEF  | <b>228,537,000</b>   | 3 years                       |

|  |   |   |                      |                       |
|--|---|---|----------------------|-----------------------|
| dunes and mangroves through the Sub-regional Adaptation Project to Climate Change in the Coastal Areas (ACCC)  |   |   |                      | Still underway        |
| Studies and construction of coastal protection facilities in the Langue de Barbarie (St Louis), Goree/Dakar Corniche roads, the Petite Cote, and Diogue Island in Ziguinchor | Langue Barbarie (St Louis)<br>Goree/Dakar Corniche roads<br>Petite Cote,<br><br>Diogue Island in Ziguinchor | Requested Funding for Studies from the European Union |                      |                       |
|  |   | Requested funding from the AfDB                       |                      |                       |
| Studies and fight against coastale erosion in Rufisque, Saly and Joal  | Rufisque, Saly, Joal  | Requested funding from the Adaption Fund              |                      |                       |
| Economic assessment of the adaptation to climate change in coastal areas   | To be defined   | World Bank  | <b>241,495,000</b>   | To start in late 2010 |
| Follow-up studies of the coastline in the member countries of UEMOA, Ghana, and the Gambia   | The entire littoral   | UEMOA   | <b>1,960,000,000</b> | Still underway        |

The figure below shows the location of these various projects on the Senegalese coastal zone.





The various programs Senegal develops at the national level meet perfectly the regional dynamics in progress (the UEMOA Observatory Littoral, the Monitoring Study of the coastal line and the development of the Main Scheme for the installation of the Littoral (IUCN), the economical Evaluation of the adaptation to climate change in coastal area (the World Bank ...). This is supplemented on one hand with the activities linked to the “Project for adaptation to climate and coastal change in West Africa” (ACCC) in Palmarin and on the other hand with concrete actions for adaptation in coastal area planned in the framework of the convention between Senegal and the European Committee (the development of detailed technical studies APS, APD, CAD) for the coastal prevention of Langue de Barbarie areas (Saint-Louis), the Peninsula of Cape Verde (Goree and the corniche in Dakar), the petite Côte (Somone, Saly and Nianing) and Diogue island (Casamance).

The previous tables illustrate that this program helps to get the complementary fund as well for the project on coastal protection at Thiawlene and Diokoul in Rufisque funded partly by the

European Committee, the Project PNUD/Japon and the country of Senegal, as for the project on coastal protection in Saly funded partly by the Project PNUD/Japon; This shows that this program is additional to other various projects. In the management of these projects, the bridge and the coordination will be guaranteed.

It should be noted that the activity in Diokoul, while contributing to coastal protection in Rufisque in general, is funded by other sources and not by the Adaptation Fund. Both Adaptation Fund and European Union funding is used to finance coastal protection activities in Thiawlene and these activities are not duplicating but complementing each other. The activity of protecting 381 meters of coastline in Thiawlene with Adaptation Fund money is not contingent on the delivery of the European Union funded section (349 meters). Therefore, Adaptation Fund activity in Thiawlene can be delivered regardless of the EU funding.

In addition, following the adoption of the Coastal Act (*Loi sur le littoral*), it is planned to make it widely known and facilitate its enforcement. The activities of the program will complement the process for consolidation of the judicial apparatus.

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

The programme will identify, analyze, and share lessons learned that could help design and implement future similar projects/programmes, as part of the efforts to ensure sustainable management of vulnerable coasts to climate change in Senegal.

A synergy of actions will also be brought about between the different programmes working in the area. For that purpose, the achievements of the “Adaptation Project to Climate and Coastal Changes in Africa: ACCC” will be capitalised, in a bid to develop in Senegal an integrated approach for the design and the implementation of effective adaptation strategies. The link will also be made with the initiative of the European Union, which, through its programme called “Initiative Global Climate Change Alliance”, will help in the implementation of an Integrated Management Project of Senegal’s coastal areas, along with the implementation of concrete actions to fight coastal erosion.

The results of the programme will be disseminated within and beyond the programme’s intervention area, with the use of the existing information sharing networks and forums. To reach that goal, the adaptation activities of the programme will bring about knowlege, such as:

- the integration of the best adaptation practices in the development of local and national policies and the design of projects/programmes and implementation mechanisms,
- the lessons on the lifting of the most common barriers to the adaptation, with a special attention to the roles of local and international partners in project/programme the design and implementation,
- the conditions required to succeed (or fail), including the replication and the graduation.

The programme will identify and participate on a permanent and adequate basis, in the scientific networks based on policy and/or any other means for sound implementation, through the lessons learned.

One of the very first action will be the development of a questionnaire, with the main objective of indentifying the targets that facilitated the successful implementation of the project, but also ensuring that the positive actions can continue after-project. For best results, the programme will use tools that will show its unity and cohesiveness, beyond its specificity, which are its multidisciplinary nature, and to strengthen its visibility in all actions, including information, sensitization or communication. For that purpose, different actions can be initiated, such as: Sensitize the teachers (school and Koranic teachers) on the project's overall and specific objectives for them to serve as relays; Set up communication tools, such as leaflets, creation of videos, organisation of workshops on climate change and its consequences; Visit to schools; Participation in sponsoring activities and patronage; Participation to shows and conferences at the national and international levels; Organisation of meetings or regular focus group discussions, with the objective of assessing the level of involvement of local people.

The meetings with the stakeholders well help identify the best practices. A communication network will be set up for the various stakeholders to channel their experiences, methods, and mechanisms of partnership. As for the revenue generating activities, the programme will be inform local people on the available financing opportunities. The setting up of an information system (SI) is also planned, with the objective of giving to the project a dynamic tool, which will be used for follow-up, planning, and support and facilitate knowledge sharing and decision-making. Use of the dispatching channels and the participatory approach that has been adopted will facilitate: access to information; improvement of the decision-making process; spreading of information and rapidity of communications between the communities at the grassroots level, and between the latter and supervising bodies; harmonisation of approaches between the different bodies involved in the solution of sustainable management of coasts vulnerable to climate change in Senegal.

The implementation strategy for capacity building activities will rely on a conceptualization approach of the demand for training, which will consist in assessing the needs at every level, and the adequate strategy is the ascendant participatory approach. Meetings and interviews will be held, in order to specifically identify the needs for training and the required skills. The evaluation of the raining will take into account the transfer of capacity building activities to the beneficiaries.

Training of the local authorities is planned as it will be a very useful contribution to the good process of information, sensitizing and communication.

#### **H. Describe the consultative process, including the list of stakeholders consulted, during project preparation.**

All stakeholders have been consulted and their inputs introduced in the various parts of programme. Those stakeholders include NGOs, women's associations, youth associations, University, State, and private institutions, the different houses of representatives (MPs, Senator, Members of the Social and Economic Council, and researchers). Most of bilateral and multilateral cooperation agencies have been contacted: Japan, the Netherlands, the EU, Spain,

the AfDB, the World Bank, UEMOA, GEF, UNDP, UNEP; UNIDO, FAO, DANONE, IUCN, Wetlands, WWF, ENDA...

The consultations have been conducted on the basis of forums and visits, on the sidelines of project, strategy and consultation development.

The Ministry of Environment has received most of these groups, due to the urgent construction work to be in the field (dikes and different developments) as coastal erosion does not wait.

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

Senegal's status as a less developed country (LCD), located on the coast of the African continent makes its various ecosystems highly vulnerable to climate change. In addition, the country's poor mining and energy resources are subjected to the vagaries of the weather, characterized by a consistent deficit of rainfall.

The national budget alone is not enough to address climatic scourges and extreme events, in addition to the promises of funding, which are difficult to mobilize, when they exist.

The Adaptation Fund brings hope, owing to its accessibility and equity.

### **PART III: IMPLEMENTATION ARRANGEMENTS**

**A.** Describe the arrangements for project/programme implementation.

The program will be conducted by three (3) implementing entities: i) Green Senegal, an NGO; ii) Dynamiques-Femmes, an association of women and youths; and iii) DEEC (Directorate of Environment). The description of the entities is in annexe 1.

Under the responsibility of CSE, the national implementing entity, the executing entities will sign memorandum of understanding and contracts (see Table below). For the setting up of the infrastructures (coastal protection and anti-salt dikes), CSE will sign a contract with private companies, as the contracting authority (ies) for the programme, with the procedure in line with the CSE's standards.

At the national level, a steering committee (CP : Pilot Committee) will be put in place with the main duties to insure the follow-up of all projects related to the management of the littoral in order to guarantee the synergy of the actions for a better efficiency of the various activities in accordance with defined criteria in each project/program. This steering committee will imply the companies responsible of the work and, as well as the concerned local services. The review of the program as well as of the other projects/programs must take into account all carried activities and their coordination. Although the project implies various sectors and in three various sites, it should be mentioned that the project is part of the integrated national plan for adaptation to climate changes.

Beside this aspect, all necessary arrangements will be made in order to establish the required synergy in the coordination and the implementation of the program. For that purpose:

A solid and institutional framework will ensure the coherence and synergy when implementing the program:

- the CP will include local representatives;
- the implementation will be carried out based on required skills and specialities and not on the area of intervention;
- an effective mechanism which aims at providing a national monitoring;
- the monitoring of the work will be centralized;

All stakeholders and beneficiaries will participate in the planning and implementation of the project.

The choice of private companies will be done through proposals (with basic skills in civil engineering). These proposals will be led by the executing entities on the basis of the Reference terms duly approved and validated by NIE and which will take into account the current rules and standards.

The procedures to be used will be those described in the procedures manual of the Centre for Environmental Monitoring. It will be supported by an official research department (or monitoring) specialized in the evaluation of technical tenders and their conformity with the described standards in the proposal.

Generally, all expenses (work, equipment or services) will be done in accordance with a procedure manual which will be developed by each executing entity inspired by the CSE's. This latter will have to validate all prepared manuals for their application

CSE will have to approve any choice carried out through in this proposal. Any rejection will be justified.

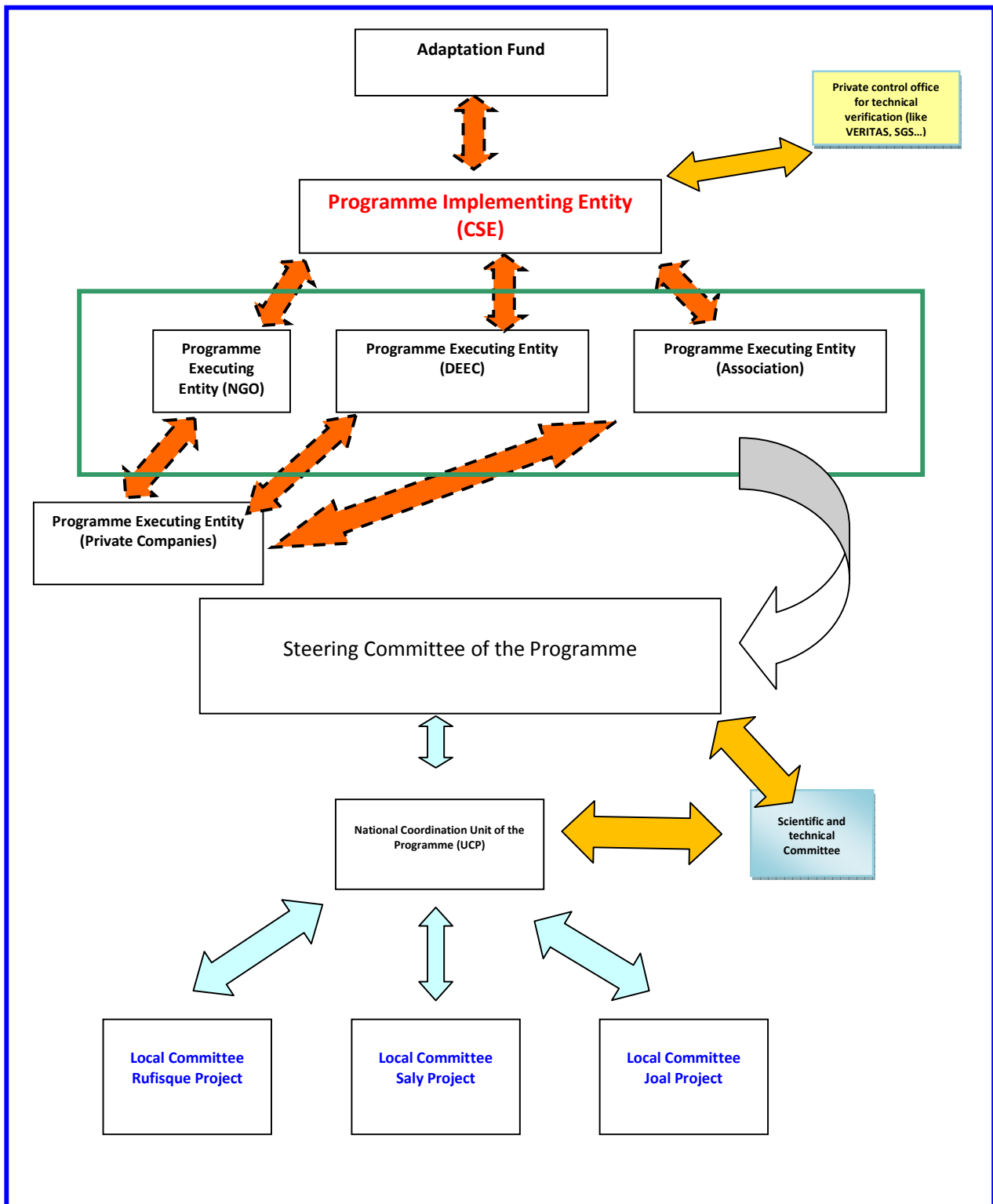
| PROGRAMME COMPONENTS AND ACTIVITY |  | ENTITY IN CHARGE | CONTRACTED ENTITY   |
|-----------------------------------|--|------------------|---|
| <i>Rufisque</i>                   | Setting up of the infrastructure of protection | <i>DEEC</i>      | <i>Private Companies</i><br><br><i>Specialized Companies (firm), to be contracted</i> |

|                    |   |                   |   |
|--------------------|---|-------------------|---|
|                    | <p>Cleaning up of channels and connection to the sea with a strong involvement of local populations.</p> <p>The cleaning of channels will be done with workmen provided with shovels and wheelbarrows which will remove the solid matters of the channels which are open sky, thus the population will be involved. A truck will transport thereafter the solid waste once dried towards the discharge.</p> | <i>NGO leader</i> | <i>Green Senegal</i>                        |
| <i>Saly</i>        | Validation of the feasibility studies of Saly   | <i>DEEC</i>       | <i>Private Companies</i>                    |
|                    | Setting up of infrastructure of protection in Saly (hotels and village)   |                   |   |
|                    | Assistance in the setting up of the fishing dock  | <i>NGO leader</i> | <i>Associations</i>                         |
| <i>Joal</i>        | Validation of the feasibility studies and building of the anti-salt dike  | Associations      | <i>Private Companies (to be contracted)</i> |
|                    | Strengthening of the protection and development of the littoral: beach, fish smokehouses,   |                   | <i>Association Dynamique-Femme</i>          |
|                    | Awareness and training programme, Environmental assessment.   | <i>NGO leader</i> | <i>Green Senegal</i>                        |
| <i>Regulations</i> | Development, strengthening, and enforcement of the regulation on the protection of the littoral and adaptation to climate change: code of the environment, law on the littoral and the rules, orders and regulations ...  | <i>DEEC</i>       | <i>Public participation</i>                 |
|                    | Communication on the regulation   | <i>DEEC</i>       | <i>Firm to be contracted</i>                |

|   |  |   |   |
|---|--|---|---|
| <i>Information/Sensitization/Training/Communication</i> | Information and sensitization on the programme   | <i>NGO leader</i><br><br><i>D.E.E.C</i> | <i>Green Senegal</i><br><br><i>DEEC</i> |
|   | Training of the different target groups on the new regulations related to the adaptation |   |   |
|   | Development of communication, distribution, and exchange items                           |   | <i>Communication firm</i>               |

The decision-making, orientation, and follow-up arrangements are the following: (i) the COMNAC, the Programme Steering Committee (PSC) led by the Environment Ministry; (ii) The Scientific and Technical Committee (CST) presided on an ad hoc basis by the representative of the most competent entity, based on the theme on the agenda. The Coordination Unit of the Programme (UCP) is in charge of the secretariat of these bodies. The UCP is led by a National Coordinator, assisted by an administrative and financial officer (RAF), a secretary, a duty officer, and experts, under the responsibility of CSE.

The **cleaning of channels** will be done with workers provided with shovels and wheelbarrows which will remove the solid matters of the channels (open canals). The population will be involved. A truck will transport thereafter the solid waste once dried towards the discharge.





## **The Steering Committee (CP)**

The implementation of the programme is supervised by the National Committee on Climate Change (*COMNAC*), which is the lead of the Steering Committee. The COMNAC will have to:

- Define the political and strategic orientations of the programme;
- Validate the annual work plan and the related budget;
- Approve the progress reports;
- Ensure the overall supervision of the programme through planning, programming and follow-up of the achievements;
- Validate the progress reports and any other reports pertaining to the programme implementation;
- Ensure the continued and annual assessment of the programme implementation;
- Stimulate the dialogue and consultations between the various partners in the programme.

The Committee will call onboard any competency, resource person and/or institution if needed. The Committee holds meetings at least twice a year.

The ‘Centre de Suivi Ecologique’, CSE, the National Implementing Entity, works with a selected Scientific and Technical Committee (STC) composed of the different executing entities: DEEC, NGOs, Associations, companies, and communication firms.

Following are the tasks CSE will ensure:

- Answer directly for the programme to the Adaptation Fund Board,
- As such, regularly submits technical and financial progress reports on the programme with regard to stated objectives and expected results ;
- As necessary, CSE will also provide some technical expertise and advise to the executing entities.

The STC will:

- Support the coordination team of the programme in the field of planning;
- Ensure the coherence of the programme interventions with the conventions, plans and programmes defined at both international and national levels;
- Support the development of strategies for the harmonious implementation of the programme;
- Give scientific and technical opinions on the choices made for the smooth sound implementation of the activities of the programme;
- Give a technical opinion on the documents and study reports submitted by the experts, the hired consultants, and any other resource person, as part of the implementation of the programme;
- Participate in the follow-up of the programme implementation (through participation in support missions in the field or planned meetings for the implementation of the programme).

## **B. Describe the measures for financial and project/programme risk management.**

The CSE will ensure that all executing agencies have proven and reliable accountancy, with a bank account. The transfer of the resources handled by the CSE will be made in the form of regular cash advances, in line with the Annual Work Plan and Procurement rhythm defined by the Board of the Adaptation Fund.

The CSE accepts to submit frequent reports to the Board of the Adaptation Fund, which in return, will transfer the resources needed for the next activity, until the end of the programme.

Any abnormality and/or event that could jeopardize the financial management of the programme should immediately be reported to the Board of the Adaptation Fund. The CSE should report any risks and propose solutions or its assessment of the situation to the Board of the Fund.

## **C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.**

The follow-up of the Joint Programme's results will be made through formal events (assessments), but also through M&E participatory methods, conducted on a regular basis. The Coordination Unit of the Programme will submit quarterly technical and financial reports assessing the range of achievements in terms of the attainment of the products, based on specific indicators. The sensitization and popularization of the programme achievement are important tools for the large dissemination of the experience gained across Senegal. The mechanism consists of:

**C.1** A daily follow-up of the progress in the implementation will be under the responsibility of the Programme Coordinator, based on the Annual Work Plan (PTA) and specific indicators.

**C.2** The regular follow-up of the evolution of the implementation will be conducted through quarterly meetings;

**C.3** A semi-annual follow-up will be carried out through a series of meetings of the Steering Committee based on a semi-annual report of the programme (RSAP) drawn by the programme's team. The format of the RSAP should include among others, the following aspects: a performance analysis in the period covered by the report, containing the results of the implementation of the activities, wherever possible, information on the state of the products, the constraints encountered in the life of the programme and their causes, the PTA, and the other financial reports, the lessons learned, clear recommendations for the future orientation in tackling the major issues when progress is made.

In addition to the semi-annual report of the programme (RSAP), the follow-up will be reported as follows: short reports insisting on the main aspects of the quarterly update of the progress made: technical reports or specific thematic reports, covering specific analysis themes or specialization themes to be submitted on an ad hoc basis by the stakeholders. The publications of the programme represent a key crystallization and dissemination method of the results made. These publications can be scientific or texts informing on the activities, in the form of contributions, multimedia publications, etc.

**C.4** The programme will be subjected to two external and independent evaluations at least:

- A mid-term independent evaluation.
- A final independent evaluation will be carried out three months ahead of the end of the programme. The final evaluation will take into account the durability and potential impact of the programme's results.

**D. Include a result framework for the project proposal, including milestones, targets and indicators.**

| RESULTS   | INDICATOR   | BASELINE  | Targets<br>End of Project  | Source of verification   | Risks and Assumptions   |
|---|---|---|--|--|---|
| <b>Outcome 1:</b> People, houses, economic and cultural infrastructures of the areas of Rufisque are protected against coastal erosion. People are involved         | <p><u>Indicator: 1.1.</u> . Number of Study Reports</p> <p><u>Indicator: 1.2.</u> Length of protected coast (in linear meter)</p> <p><u>indicator.1.3</u> Linear number of cleaned up channels</p>                    | <p>One study validated for Rufisque</p> <p>6,000 square kilometres of areas threatened by flood.</p> <p>Coastal facilities and human settlements facing high threats.</p>     | <p>The detailed technical feasibility studies for the protection of the coastal areas of Rufisque are updated</p> <p>The protection works of the coastal areas of Rufisque are built ( 381 linear meter of wall built through the Adaptation Fund )</p> <p>The waste ways of rainwater are cleaned up and connected to the sea</p> | <p>The update of the detailed technical feasibility studies for the design of the protection works of the coastal areas of Rufisque is completed</p> <p>The construction of the protection works of the coastal areas of Rufisque is completed</p> <p>The cleaning up of the channels and connection to the sea is completed</p> | <p>Efficiency of technical measures adopted to fight coastal erosion</p> <p>Management of the project heavily dependent on subcontracting</p> |
| <b>Outcome 2 :</b> Populations, houses, economic and cultural infrastructures of the areas of Saly are protected against coastal erosion. Local people are involved | <p><u>Indicator 2.1</u> Study Reports</p> <p><u>Indicator: 2.2.</u> Length of the coast protected (in linear metre)</p> <p><u>Indicator 2.3</u> Existence of a sound fishing dock and a good fish processing area</p> | <p>Any study was mad in Saly</p> <p>3 square kilometres of areas threatened by flood.</p> <p>destruction of fishing docks and fish processing areas due to sea-level rise</p> | <p>The detailed technical feasibility studies for the protection of the coastal areas of Saly are completed and validated</p> <p>The protection works of the coastal areas of Rufisque are completed</p> <p>The development of the fishing dock and the fish processing area is done</p>   | <p>The detailed technical feasibility studies for the design of the protection works of the coastal areas of Saly is completed</p> <p>The protection works of the coastal areas of Saly are completed</p> <p>The development of the fishing dock and the fish processing area is completed</p>                                   | <p>Management of the project heavily dependent on subcontracting</p>  |
| <b>Outcome 3:</b> The lands for rice-growing activities in Joal are protected against salination.   | <u>Indicator 3.1.</u> .Study reports, number of curbs and dikes built   | Rice-growing activities affected by intrusion of saline waters  | The technical studies and the dikes to prevent salt intrusion into the rice-growing  | The technical studies and the dikes to prevent salt intrusion into the rice-growing areas of Joal are  | Conflict over the management and maintenance of the built   |

|  |  |  |   |   |  |
|--|--|--|---|---|--|
| <p>Coastal infrastructure is built for fish processing activities. The people living in the coastal areas of Joal are involved in a beach cleaning activity and develop and receive an awareness and training</p>  | <p><u>Indicator 3.2.1.</u> The curbs for protected beaches and the fish processing areas are developed</p> <p><u>Indicator 3.2.2.</u> The setting up of a rational and effective waste management programme in the beach is</p>  | <p>Drainage of rice growing areas difficult</p> <p>The beach is used as lavatory and the waste management system is very poor</p>  | <p>areas of Joal are done.</p> <p>The protection and development of beaches and fish processing areas are completed</p>   | <p>completed</p> <p>The protection and development of beaches and fish processing areas are completed</p> <p>The setting up of a rational and effective waste management programme in the beach is</p>  | <p>infrastructures between local communities, private companies, extension services</p> <p>Local communities do not fully participate to the project</p> |
| <p><b>Outcome 4:</b><br/>Regulations exist and cover all areas. The code of the environment is revised; the law on the littoral is adopted. These two documents take into account the CC dimension. Good communication is launched to explain these documents.</p> | <p><u>Indicator 4.1.</u> Number and nature of the legal materials drawn up and in force</p> <p><u>Indicator 4.2.</u> Number of popularization sessions and participants</p>  | <p>No (or inadequate) legal materials dealing with the management of the littoral and taking into account the CC</p> <p>Peoples in these areas have very few information about the legal materials</p>   | <p>The legal materials dealing with the management of the littoral and taking into account the CC dimension are drawn up.</p> <p>The texts drawn up are popularized</p>   | <p>The development of legal documents pertaining to the management of the littoral and taking into account the CC dimension is completed</p> <p>Popularization sessions of the legal materials drawn up are held</p>  | <p>Low impact/ application of the Coastal Act</p>  |
| <p><b>Outcome 5:</b><br/>People are sensitized and informed on the adaptation techniques to climate change in coastal areas and enforcement of the regulations on the management of coastal areas.</p>   | <p><u>Indicator 5.1.</u> Study Report</p> <p><u>Indicator 5.2.</u> Number and nature of the communication tools developed</p> <p><u>Indicator 5.3.</u> Number of sessions/workshops held or participants</p> <p><u>Indicator 5.4.</u> Number of sessions/workshops or participants</p> | <p>Education on adaptation is still a national priority</p> <p>Adaptation programmes/projects are still devoided of adequate tools for taking up and disseminating learned lessons on community adaptation</p> <p>Cross learning mechanisms are little_known</p> | <p>A training and sensitization programme is designed and carried out</p> <p>Adequate communication tools are developed and shared.</p> <p>People are informed, sensitized and trained on the adaptation techniques to climate change en coastal areas</p> <p>The different target groups are trained in the new regulations on the adaptation.</p> | <p>A training and sensitization programme is conducted</p> <p>The development of adequate communication tools is completed and the tools shared</p> <p>Information, sensitization and training sessions /workshops are held</p> <p>Training sessions/workshops are held</p> | <p>Lack of coordination among the executing entities</p> <p>Low consciousness of the populations and decision makers about the on climate change</p>     |

## Calendar of activities:

| Activities   | Calendar |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
|--|----------|---|---|---|---|---|---|---|---|----|----|----|--------|----|----|----|----|----|----|----|----|----|----|----|
|  | Year 1   |   |   |   |   |   |   |   |   |    |    |    | Year 2 |    |    |    |    |    |    |    |    |    |    |    |
|  | 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13     | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| <b>Action 1.1</b> : Update the technical and detailed feasibility studies for the design of the coastal protection facilities in the areas of Rufisque   | ■        | ■ |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 1.2</b> : Building up of the coastal protection facilities in the areas of Rufisque. The target areas host houses, economic and cultural infrastructure (Fish processing areas, fishing docks, cemeteries, etc.) |          |   | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  |    |    |    |    |    |    |    |    |
| <b>Action 1.3</b> : Cleaning up of the channels and connection with the sea (strong involvement of local populations)  |          |   |   |   |   |   |   |   |   |    |    |    |        |    | ■  | ■  | ■  |    |    |    |    |    |    |    |
| <b>Action 2.1</b> : Carry out and validate the detailed technical feasibility studies for the design of the protection facilities of the coastal areas of Saly   | ■        | ■ | ■ | ■ |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 2.2</b> : Set up the protection facilities of the vulnerable areas covering hotels, people, poor villages, as well as the fishing docks  |          |   |   |   |   | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |    |    |    |
| <b>Action 2.3</b> : Assistance in the development of the fishing dock and the fish processing area   |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    | ■  | ■  | ■  | ■  |    |
| <b>Action 3.1</b> : Study and achieve the anti-salt barriers in the rice-growing areas of Joal and the other agricultural crops.   |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 3.2</b> : Protect and develop beaches and fish processing areas.   | ■        | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |
| <b>Action 3.3</b> : Restore the cleanliness of the beaches   | ■        | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |
| <b>Action 3.4</b> : awarness and training programme  | ■        | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |
| <b>Action 4.1</b> : Design, fine tune, and strengthen the regulation pertaining to the management of the littoral, by taking into account the CC dimension: Environment Code, other codes and regulations                  | ■        | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |
| <b>Action 4.2</b> : Disseminate the elaborated texts   |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 5.1</b> : Design and implement the awareness and training programme for the different target groups on the new regulations on adaptation   | ■        | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |
| <b>Action 5.2</b> : Fine tune and share the suitable communication tools   |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 5.3</b> : Inform, sensitize, and train people on the adaptation techniques to climate change in coastal areas  |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 6.1</b> : Monitoring des activités du project  | ■        | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■  | ■  | ■  | ■      | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  | ■  |
| <b>Action 6.2</b> : External Evaluation and audit  |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |
| <b>Action 6.3</b> : Control of realisations  |          |   |   |   |   |   |   |   |   |    |    |    |        |    |    |    |    |    |    |    |    |    |    |    |

**Detailed Budget of the Follow-up/Evaluation Plan**

| <b>ACTIVITIES</b>                                 | <b>RESPONSIBLE</b>                                     | <b>COST (x 1000 US\$)</b> | <b>PERIOD</b>                                 |
|---|--|---------------------------|---|
| Inaugural Project Workshop                        | - Coordinator<br>- CSE                                 | 5                         | As soon as 1st bimestrial period              |
| Elaboration of the PTA                            | Project's Team   | 0                         | Annual  |
| Project's Steering committee meeting              | Coordinator  | 30                        | 3 months after signing, then at least 2x/year |
| Meeting of the technical and scientific committee | CSE  | 20                        | at least 2x/year                              |
| Review of indicators with beneficiaries           | Follow-up Officer                                      | 5                         | 3 months after signing                        |
| Technical & financial reports                     | Coordinator  | 0                         | Quarterly                                     |
| Follow-up & Supervision Missions                  | - Officer for follow-up/evaluation<br>- Project's Team | 75                        | Monthly                                       |
| Control of Work                                   | - CSE<br>- Control firm                                | 80                        | Permanent                                     |
| Mid-term Evaluation (external)                    | - CSE<br>- Project's Team<br>- Consultants             | 35                        | Mid-term                                      |
| Audit   | - CSE<br>- Consultant                                  | 65                        | Annual  |
| Final Evaluation (external)                       | - CSE<br>- Project's Team<br>- Consultants             | 35                        | End of project                                |

## **RISKS AND MITIGATION STRATEGY**


| <b>RISKS</b>   | <b>LEVEL OF IMPACT</b> | <b>PROBABILITY</b> | <b>MITIGATION STRATEGY</b>   |
|--|------------------------|--------------------|--|
| Awareness level of the people and decision-makers compared to CCs  | low                    | low                | The project seeks to strengthen policy dialogue and consolidate the society's awareness on CCs. The project has a communication strategy expected to boost awareness on climate  |
| Low level of implementation of the new law on the coastal area   | high                   | low                | The project will support the institutions in charge of its application   |
| Lack of between implementing bodies  | medium                 | low                | The DEEC and GREEN SENEGAL are aware of the necessity of strong coordination of the interventions with local officials and local beneficiaries   |
| Local governments do not accept the project  | low                    | medium             | During the preliminary phase of NAPA, a wide consultation campaign had been launched, which allowed to identify priorities, in collaboration with local people and officials. Besides, as part of the project, the local governments will be associated to the implementation and supervision of the facilities to be set up, for better ownership of those facilities |
| Budget forecasts not adequate, under estimation of the projected line items allocations                                  | medium                 | medium             | A financial component called 'Divers' (Miscellaneous) will be integrated and will concentrate 5 per cent of the budget for possible readjustments  |
| Delays in the disbursement of funds, due to length of the chain  | medium                 | low                | The arrangements for the implementation allow the TRUSTEE to disburse on time, the start-up funds to the MIE (CSE) to allow the CSE to have enough leeway for the project  |
| Conflict on the management and maintenance or facilities between private sector, communities, local government and State | low                    | low                | The project will develop an management plan approach involving all stakeholders and institutions and will ensure transparency. This will be made possible through a strategy of information and sensitisation defined by the project.  |

|   |        |        |  |
|---|--------|--------|--|
| Management of the project heavily depending on subcontracting | medium | medium | The project will introduce a control of the quality of the service, on which the firms will commit themselves. Intermediate deliveries will also be instituted |
|---|--------|--------|--|




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

**A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT<sup>1</sup>** *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 of 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:*

|   |  |
|---|--|
| <p><i>(Enter Name, Position, Ministry)</i></p> <p>Mme Ndèye Fatou Diaw GUENE</p> <p>Focal Point Adaptation Fund<br/>Head of Monitoring-Evaluation Bureau</p> <p>Direction of Environment and Classified Establishments<br/>Ministry of Environment<br/>Designated National Authority of Senegal</p> | <p>Date: (Month, day, year)</p> <p>August 02, 2010</p>  |
|---|--|

<sup>6</sup> 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

|  |  |
|--|--|
| <p>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 (including Senegalese National Adaptation Programmes of Action on Climate Change; Senegalese National Climate Change Adaptation Strategy, Senegalese Poverty Reduction Strategy Paper, Adaptation to Climate and Coastal Change in West Africa (ACCC); Climate Change and Development – Adapting by Reducing Vulnerability (CC-DARE); and Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation: Integration of Climate Change Adaptation in Sustainable Development in Senegal (PAA/INTAC) and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p> |  |
| <p>Name &amp; Signature</p> <p><i>Dr. Assize Touré</i><br/>         Director of Centre de Suivi Ecologique<br/>         Implementing Entity Coordinator</p>  |  |
|    |  |
| Date: 02/08/2010   | Tel. and email: +221 33 8258066<br>assize@cse.sn |
| Project Contact Person: Ndèye Fatou Diaw GUENE   |  |
| Tel. And Email: +221 33 8210725; <a href="mailto:denv@sentoo.sn">denv@sentoo.sn</a>  |  |

République du Sénégal  
(Un Peuple – Un But – Une Foi)

MINISTÈRE DE L'ENVIRONNEMENT ET  
DE LA PROTECTION DE LA NATURE

Direction de l'Environnement  
et des Etablissements Classés

N° 03058 / MEPN / DEEC

Dakar, le 02 AOUT 2010

*LE POINT FOCAL  
ADAPTATION FUND*

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

**Subject:** Endorsement for the Project "ADAPTATION TO COASTAL EROSION IN  
VULNERABLE AREAS IN SENEGAL"

In my capacity as focal point 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 the country.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the proposal will be coordinated and implemented by the National Executing Entity.

Sincerely,

Mrs. Ndèye Fatou Diaw GUENE  
Focal Point Adaptation Fund  
Head of Monitoring-Evaluation Bureau  
Direction of Environment and  
Classified Establishments  
Ministry of Environment



Direction de l'Environnement et des Etablissement Classés – 106 rue Carnot 1<sup>er</sup> étage  
BP 6557 Dakar-Etoile (Sénégal) Tel : (221) 821 07 25 – Fax : (221) 822 62 12

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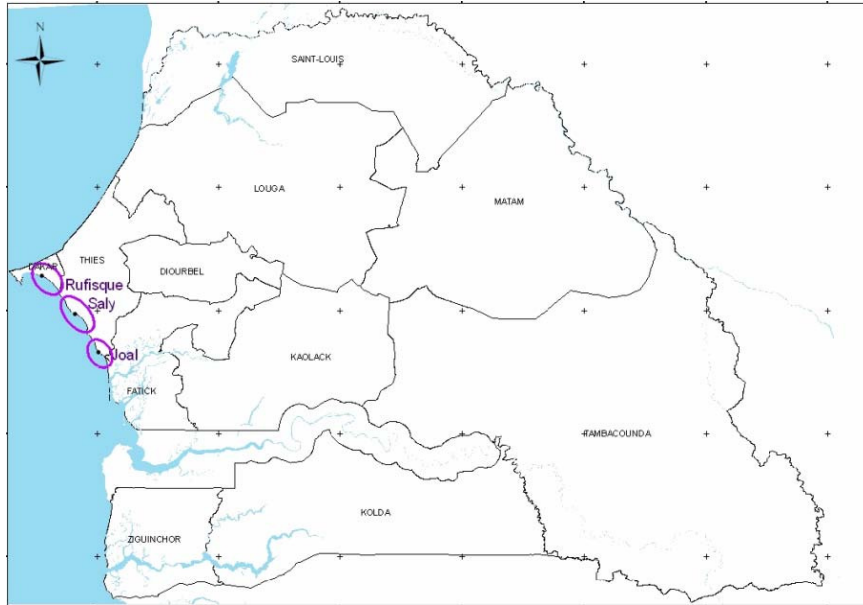
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## List of Acronyms

GDP: Gross Domestic Product  
CC: Climate Change  
CONGAD: Conseil des ONG d'Appui au Développement  
DEEC: Direction de l'Environnement et des Etablissements Classés  
CSE: Centre de Suivi Ecologique  
MDG: Millenium Development Goals  
NAPA: National Adaptation Plan of Action  
ACCC : Adaptation aux changements climatiques. Répondre aux changements affectant le littoral et ses dimensions humaines en Afrique de l'Ouest, par une gestion intégrée de la zone côtière  
CC DARE: Climate Change and Development – Adapting by REDucing Vulnerability  
NGO: Non Governmental Organization  
INFOCLIM: Plateforme participative d'information pour l'adaptation des communautés vulnérables aux changements climatiques  
ISRA: Institut Sénégalais de Recherches Agricoles  
JICA: Japan International Cooperation Agency  
UNDP: United Nations Development Program  
SO: Strategic Objective  
GIE: Groupement d'intérêt économique  
CCNUCC: Convention Cadre des Nations-Unies sur les Changements Climatiques  
UEMOA: Union Economique et Monétaire Ouest Africaine  
GEF: Global Environmental Facility  
BAD: African Development Bank  
WB: World Bank  
BCI: Budget Consolidé d'Investissement  
UNEP: United Nations Environment Programme  
UNIDO: United Nations Industrial Development Organization  
FAO: Food and Agricultural Organization  
IUCN: International Union for Nature Conservation  
Wetlands: Wetlands International  
WWF: World Wildlife Fund  
Enda: Environnement et développement du tiers monde  
AGETIP : Agence d'Exécution des Travaux d'Intérêt Public contre le sous-emploi.  
COMNAC: Comité National Changement Climatique  
CNP: Comité de pilotage du projet  
UCP: Unité de Coordination du Projet  
RAF : Responsable administratif et financier  
CST : Comité Scientifique et Technique  
S&E : Suivi/ Evaluation  
PTA : Plan de Travail Annuel  
RSAP : Rapport Semi-Annuel du Projet  
SAPCO : La Société d'Aménagement et de Promotion des Côte et Zone Touristiques du Sénégal (SAPCO-SENEGAL)

## APPENDIX

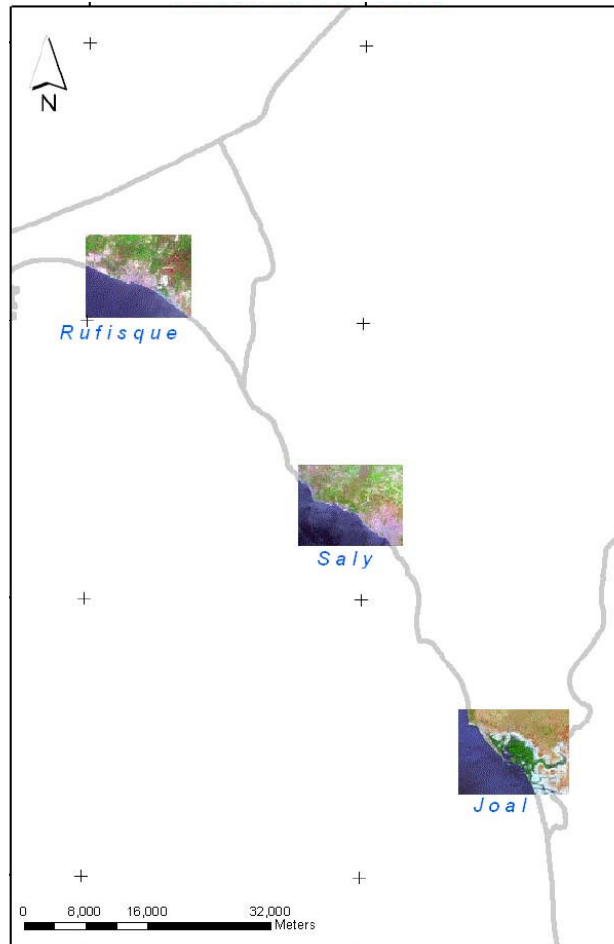
### DESCRIPTION OF THE PROGRAMME SITES



**Figure 1** : Location of the 3 sites of the study: Rufisque, Saly and Joal

The Programme will be implemented in three sites on Senegal's coastal area (see fig. 1 and 2) which are particularly vulnerable to coastal erosion or soil salinization, both related to climate change.

These areas are located in the Cap Vert peninsula (Rufisque) and the Smaller Coast (Saly and Joal).



**Figure 2** : Location of the three sites of the programme (Rufisque, Saly and Joal)

### **Rufisque:**

The town of Rufisque is part of the Cap-Vert Peninsula, the westernmost part of Senegal. It is on the Atlantic coast, near the Goree Bay, at about 25 km south-east of Dakar, between the 14°41' and 14°46' 30 N parallels and the 17°15' and 17°20' O meridians.

The Highway Dakar-Thies (N1) runs right across Rufisque, dividing the town into two parts, with clearly different structures.

Thiawlene, the intended programme implementation area, is a district of the town of Rufisque. The shore in Thiawlene is markedly directed towards the north by 115°.

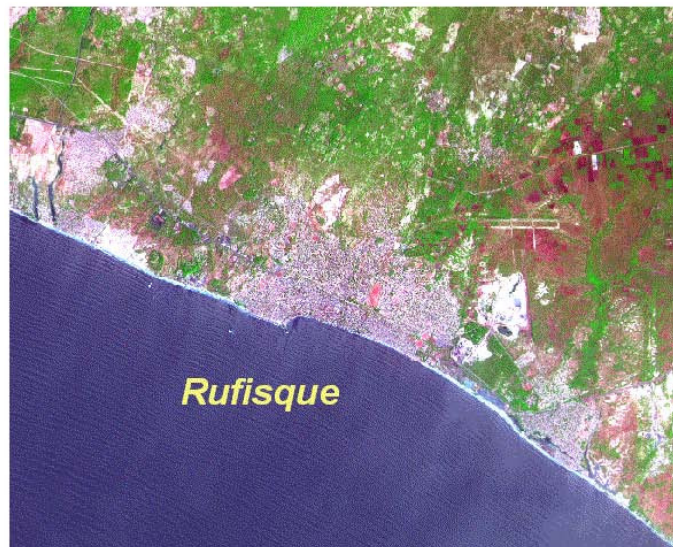
Rufisque is located in a lower area, with an altitude of less than 5 m. It is often described as a basin between two plateaus: Mbao (maximum 25 m above sea level) in the west, and Bargny itself (maximum 45 m above sea level) in the east.



Between Mbao and Bargny, the coast is overall low and sandy. It is limited (outside residential areas) by an offshore bar, with an average altitude of 2 to 2.5 m (maximum 4 m above sea level) and occupied in some places by prickly pears. This offshore bar, which is 10 to 50-metre large, is sometimes broken during the rainy season by natural outlets also called thalwegs.



**Figure 3** : The districts on the Rufisque coastal area



**Figure 4** : Aerial photographs of the site of Rufisque

For a long time, the town of Rufisque was known as an area of coastal erosion. The beach, especially along the central part of the town (Keuri Souf - Keuri Kao) had considerably shrunk prior to the construction of sea wall and one could see in the Merina and Thiawlene sectors, overhanging building and traces of a road street.

Research work by Diallo (1982) and Sall (1982), based on the comparison of cadastral maps and aerial photographs concluded that the average annual recession rate for the 1933-1980 period was 1.30 m.



A new study, based on aerial photos dating back to 1959, 1968, 1972, 1976, 1980 and 1989 found an average recession rate of 1.20 m for the period 1959-1980 (Niang-Diop, 1993 ; 1995). However, this rate hides the relatively important spatial and chronological differences.

There are many socioeconomic constraints in Rufisque, the most pertinent for the programme being the following:

- People's poor access to resources and basic social services, such as clean water, education and sanitation, despite the fact that these districts have been set up for a long time on the coastal area. This situation is a result of the lack of housing development plans in most of those districts;
- Overcrowded houses, with high population densities, and over 30 per cent of those houses under-equipped or lacking equipment;
- A high and ever-increasing per capita demand for space, exacerbated by the loss of houses, due to coastal erosion;
- Underemployment of the working population structurally oriented towards fishing activities.

### **Saly and Joal**

Saly and Joal are located on the Smaller Coast, which stretches on almost 70 km between Dakar and Joal-Fadiouth and is characterized by a succession of rocky capes and sandy bays, with a general NW-SE to NNW-SSE orientation.

The Smaller Coast is relatively isolated, with sectors consisting of a northern side on erosion and a southern part on accumulation, often represented by spits.

Sandy beaches of smaller width (10 to 40 m) between Hann and Bargny) stand against a 2-meter high and 10 to 50-metre wide offshore bar.

The Smaller Coast presents features, which make it almost the opposite of the Greater Coast (northern coastal area) and which represent a major cause of *great vulnerability to coastal erosion*: short foreshores, a very limited sand reserve (offshore bar) and weak sedimentary transits, especially in the Hann and Bargny sectors.

There is an interruption of the littoral transit by the canon of Kayar, then by a succession of rocky bays and capes of the head of the Cap Vert peninsula. This confirms the role of the Dakar peninsula as a breakwater, which also explains the existence of an important sedimentary deficit at the starting point of the Smaller Coast (Barusseau, 1980).

The Smaller Coast plays an important role in the economy of the nation, due to the development of tourism and fishing activities in the area.

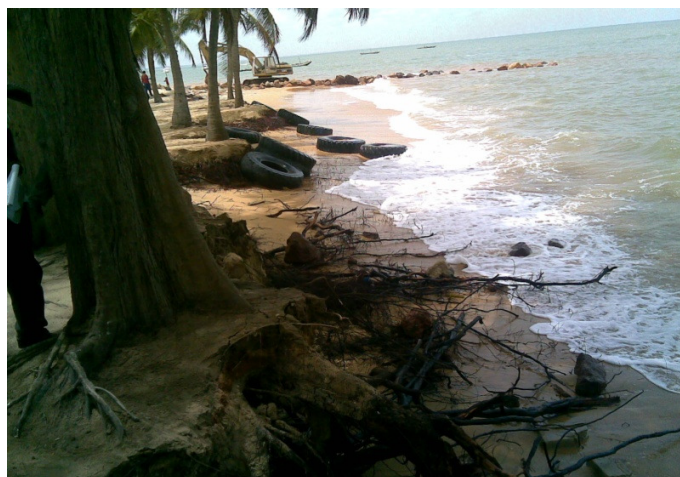
The Smaller Coast has witnessed major changes on its strandline. In fact, this coast presents a series of capes, bays and spits, representing grow-out and cyclical erosion areas, which are phenomena to be taken into account when building infrastructures in the coastal area.

This coastal area-related dynamics similarly varies from one point to the other:

- **Saly Area:** Coastal erosion phenomena are observed in the area. So, Ba (1996) reports erosion phenomena in Saly, with the sea intrusion in spaces and the threat on hotels in the area. The same author indicates recession of the shore from 10 to over 20 m between 1994 and 1996, which equates to a whopping annual recession rate of 5 to 10 m.
- **Joal:** Murday (1986) has proposed a evolution map of the spit of Joal for the period 1954-1980, based on aerial photographs and showing a continual lengthening of the end of the spit towards the south-east, coupled with severe erosion in Jaol itself.



**Impact of the coastal erosion in Saly**



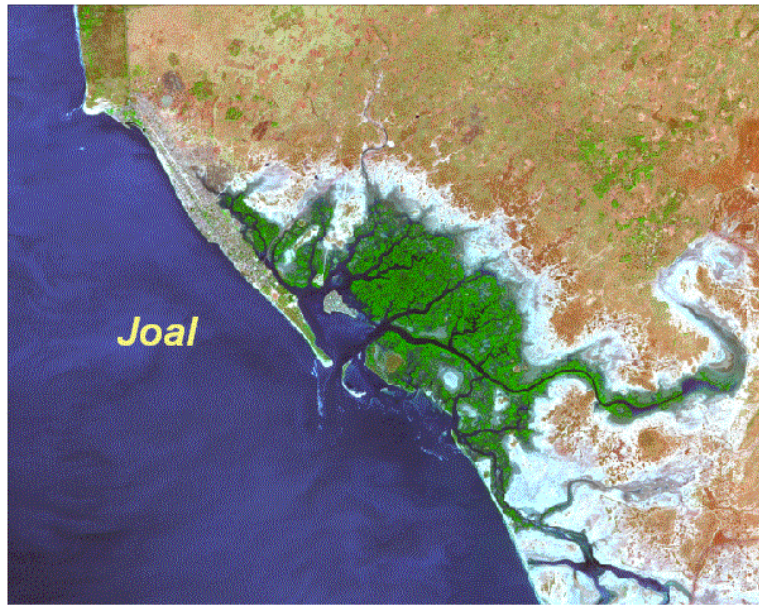
**Erosion of the Hotel Teranga beach in Saly**



**The vestiges of a gas station in Joal**



**Figure 5** : Aerial photographs of the site of Saly



**Figure 6** : Aerial photographs of the site of Joal



## **PRESENTATION OF THE EXECUTING ENTITIES**

### ***Presentation of GREEN SENEGAL***

GREEN SENEGAL, a research and environmental study group consists of a multidisciplinary team specializing in the fields of development research, training, development and assistance to grassroots community organisations, in collaboration with training and research institutions, and development partners.

With its long training and supervision experience in rural areas, it is more involved in the promotion of sustainable farming techniques and technologies in rural areas, through training and communication.

In the evolution of its institutional environment, the Organisation's commitment to identify its site and intervention fields has been balanced by the major recommendations made at the end of the strategic planning workshop held in October 1999. These recommendations have always been used as references by GREEN SENEGAL, when defining its major policies in terms of local development approach, implementation of its programme and mobilisation the needed resources for its operation.

The intervention strategy of GREEN SENEGAL revolves around four strategic points, which are:

- the strengthening of institutional, managerial and technical capacities of the Grassroots Community Organisations and households;
- the support to methodological research, the identification, the conception and execution of Projects/Programmes, the follow-up and evaluation, and the environmental impact studies.
- the carrying out of an audit on environment, information cartography, and rational natural resource planning; and
- communication, information, environmental education, and advocacy of rural development and the protection of the environment.

GREEN SENEGAL's sphere of activity encompasses the regions of Thies, Louga, Diourbel, Fatick, and Saint-Louis, more specifically the Rural Communities.

GREEN SENEGAL is involved in the following activities:

- Natural resource management;
- Promotion of Food Security;
- Environmental Protection;
- Information, Education, Communication, Advocacy;
- Training ;
- Participatory Planning.

## Organisation

GREEN SENEGAL's Board of Directors is composed as follows:

| Name              | Sex | Post                | Affiliation                     |
|-------------------|-----|---------------------|---------------------------------|
| Massamba Dieng    | M   | President           | Agronomist                      |
| Pape Ndiaye       | M   | Member              | Forestry expert                 |
| Fatou Ndaw Ba     | F   | Member              | Agronomist                      |
| Dr. Saliou Ndiaye | M   | Vice-president      | Researcher, University of Thies |
| Oumou Niang       | F   | Member              | Anthropologist                  |
| Massata Gueye     | M   | Member              | Agronomist                      |
| Anne Reynebeau    | F   | Member              | Communication Specialist        |
| Babacar Ndao      | M   | Member              | Forestry expert,                |
| Wore Seck         | F   | Member and Director | Environmentalist                |

For the implementation of these activities, the following human resources are mobilized:

- One environmentalist
- One secretary
- One economist
- One administrative and financial assistant
- One forestry expert
- Two forestry works engineers
- Two agroforestry technicians
- One geographer
- Two drivers
- Two guardians.

### **Affiliation to Exchange Networks**

At the national level, GREEN Senegal is a member of the following networks:

- Conseil des Organisations Non Gouvernementales d'Appui au Developpement (Council of Development Support NGOs, CONGAD) at the national and local levels: Region of Thies;
- The 'Reseau Environnement Developpement' (Environment and Development Network, RED), an association of NGOs working in the field of environment;
- The 'Reseau des ONG actives dans le Genre et Developpement (Network of NGOs working on Gender and Development Issues) ;
- The 'Reseau International des ONGs pour la lutte contre la Désertification (International Network of NGOs Fighting Desertification, RIOD) ;
- The 'Reseau des Operateurs du Programme National d'Infrastructures Rurales' (Network of National Rural Infrastructure Programme Operators)

- The ‘Reseau de la Methode Active de Recherche et de Planification (Network for Active Research and Planning Method, MARP/Senegal).

At the sub-regional level, GREEN Senegal works with:

- The DIMITRA Network: Femmes Rurales pour le Développement ‘Rural Women for Development);
- The (RNSCC) ‘Reseau regional pour la synergie entre la convention sur la diversite biologique et la Convention des Nations Unies pour la lutte contre la desertification en Afrique de l’Ouest et du Centre’, whose members are Senegal, Burkina, Mali, Niger, Cameroun, Benin, Congo, Guinea, Togo and Mauritania, is in the process of approval
- The (REPAOC) ‘Reseau des Plateformes nationales d'ONG d'Afrique de l'Ouest et du Centre’ (Network of the National Platforms of West and Central African NGOs’)

### ***Presentation of DEEC***

Under the authority of the Senior Minister for Environment and Nature Conservation, the Department of Environment and Classified Institutions is responsible for the implementation of the government’s environment policy, especially the protection of nature and people against pollutions and other nuisances.

For that purpose, its mission is:

- The prevention and fight against pollutions and other nuisances;
- The follow-up of the actions by various services or bodies working on environmental issues;
- The development of legal texts pertaining to environment;

The Department of Environment and Classified Institutions is headed by a Director appointed by a decree.

The Director of Environment and Classified Institutions can be assisted by a Deputy Director and technical advisors, appointed by our services.

The Department of Environment and Classified Institutions is composed as follows:

- A Division of the Classified Institutions;
- A Division of Environment Impact Evaluations;
- A Division of Prevention and Fight against Pollutions and other nuisances;
- A Division of Legal Affairs, Communication and Follow-up -Evaluation,
- An office for General Administration and Equipment (BAGE);
- Regional Divisions of Environment and Classified Institutions
- The Convention Centre of Bale is joined to the Department of Environment and Classified Institutions.

## ***Presentation of the Association Dynamique-Femme***

### **Creation**

La Dynamique-Femme is the result of the awareness of women gathered in the GPF, GIE, Mbotaye, and Tontines, of the urgency to get more organised, to consult each other and to harmonize their interventions. The stated objective is to make women's contributions to the development of the town more visible. The Association gathers about 60 women's groups, with 2,600 active members in various economic sectors. Founded in 2005 as a GIE, Dynamique-Femme became an Association on 9 October 2008.

### **Objectives:**

Participate in poverty reduction and improve the living conditions of women and their households in general.

The leading organs are:

The General assembly (AG), the management committee (CD), the bureau, the control commissions (CC)

**Resources:** They come from:

- Subscription fees
- Members' annual contributions
- Subsidies
- Revenues from the sale of the association's products
- Lucrative events
- Donations and legacy.

The Association owns

- A registered office located at the Fuenlabrada Social Centre
- An account at the CMS
- Two plots of land of (15m x 20m) in the Caritas Area in Joal-Fadiouth
- One hectare of land in the Rural Community of Ngueniene (Ndianda Crossroad)
- Three fish-smoking kilns, with keys to access the drying and processing areas (TANN).

**Areas of intervention:** They will be multiple and diverse in the following forms:

- Management of seven houses : Equipped community house, shop, literacy room, restrooms, greens, biological farming experimentation unit)
- Functional literacy in national languages in suburban areas (9 classes of 60 seats apiece).
- Administration of the CAF (Women's Auto-financing Funds) to support the literacy component.
- Dyeing, production of shea soap, workshop on fruits and vegetables, sewing, catering
- Sanitation: Beach clean up, collective work in town districts and public services, restoration of the mangroves, protection of the marine fauna (tortoises, oysters...)
- Reforestation (city streets, processing sites, natural reserve of Ngazobil.



- Sensitisation on HIV/AIDS, in partnership with ADEMÁS and Pool SIDA
- Malaria, in collaboration with the City Council's network against malaria
- Le dépistage volontaire
- Training women to become moulders, bricklayers
- Fight against feco-oral route transmitted diseases
- Conférence on:
  - Climate change, in partnership with CONGAD/GREEN Senegal
  - Women's rights with RAFET (African Network of Women at Work)
  - Training in women's entrepreneurship, with the district service of community development
  - Workshop on Women, leadership, and management
  - Social Actions: donations of materials to decentralized services and schools, daaras and Franco-Arab schools
- Participation bodies: 'Dynamique-Femme' is a member of the following bodies:
  - AMP-CLC/ED (Local Consultation Framework for Environment and Development)
  - RAFET (Réseau Africain pour la Femme Travailleuse)
  - District Federation of the Groups for the Promotion of Women (UFDPF)
  - Pool Sida
  - Health societies (Fay Faju)
  - CMS
- Partnerships: The Association has the following partners
  - The City Council
  - The decentralised Services
  - La Cotière (Local Community Radio)
  - Traditional and religious authorities
  - Architectes Sans Frontière (Architects Without Borders, AST)
  - Intervida
  - Global Nature
  - ADEMÁS
  - GREEN Senegal
  - RAFET

## **THE PROGRAMME STEERING COMMITTEE:**

The mission of the steering committee is to:

- Ensure the smooth implementation of the programme;
- Approve the annual progress and financial reports of the programme;
- Validate the annual work schedule for the programme and its related budget;
- Supervise the fulfillment of the commitments made by the different parties ;
- Approve the adjustments and/or potential modifications in the sphere of activity, the activities and/or mid-term results, as proposed by the Programme Coordinator to make actions more relevant to reach the set objectives;
- Make recommendations to the different authorities to hold meetings on any questions relating to budget change; particularly dealing with hikes or cuts;
- Discuss the programme's progress and its implications;
- Identify the concerns over the activities of the programme and its implementation;
- Ensure integrated coordination of the actions of the programme with government bodies dealing with adaptation issues;
- Give an opportunity to government representatives and non-governmental participants to update and inform each other;
- Guarantee the transparency of the process and multi-sectoral participation;
- Supervise the closeout of the programme.

## **Sanctions for the faults committed by applicants or contractors**

The 'Centre de Suivi Ecologique' (CSE) demands that the promoter and contractors respect the top rules of professional ethics during the contract signing and performance. The executing institution and the potential applicants should make a declaration certifying that they have read the provisions of the charter of transparency and ethics on public contracting, adopted by decree, and that they are committed to its respect. Sanctions can be imposed by the accrediting entity against the promoter and the applicants and markets holders, in case of proven violations of the contracting rules by the entities concerned. Any promoter, applicant or holder is liable to sanctions if he:

- a) Has given or promised to give to anyone intervening in the contracting process, an unjustified financial or other advantage, directly or through intermediaries, in exchange for a contract;
- b) Is involved in collusion practices with applicants, in order to set the offers at artificial and non competitive levels, depriving the contracting authority the benefits of a free and open competition;
- c) has influenced the contracting procedures or the definition of the services, in order to reap unwarranted advantages;
- d) has deliberately provided in his offer, information or false or deceitful declarations that could affect the result of the contracting procedure;
- e) Has established requests for payment, which are inconsistent with the services really provided.

The violations committed are certified par the 'Centre de Suivi Ecologique', which launches the immediate inquiries and seizes all competent authorities. Without prejudice to legal proceedings or reparation for the loss sustained by the contracting authority, the following sanctions can be pronounced, and, depending on the case, on a cumulative way

- The cancellation of the contract binding the 'Centre de Suivi Ecologique' and the ban to apply for the fund for a period to be defined, depending on the seriousness of the violations committed.

- The confiscation of the guarantees made as part of the contracting procedures, in which he participated;  
When the violations committed are established after the contract was awarded, the sanction delivered is accompanied with the cancellation of the ongoing contract or the substitution by another company, to the risks and perils of the penalized offender.

The offender can lodge an appeal to change any decisions by the 'Centre de Suivi Ecologique', before the courts dealing with administrative matters; this appeal is suspensive.

## ADDITIONNAL TECHNICAL INFORMATION

The various activities and realizations planned, within this Program submitted to the Adaptation Fund, are complementary to on-going or planned initiatives. There are no conflicting initiatives. Although, the volume of work considered requires an important financing, which obliges to consider and involve several donor partners or funding sources, including the Adaptation Fund.

All the initiatives related to the protection of the Senegalese coast are well coordinated and design through important documents such as the Senegalese NAPA (National Adaptation Action Plan). Similarly the interventions of donors are well planned and organized.

The Senegal Program “Adaptation to coastal erosion in vulnerable areas” encompasses three sites: Rufisque, Saly and Joal.

- In Saly and Joal, full feasibility and technical studies are envisaged allowing precisely designing and conceiving the planned structures.
- In Rufisque (Thiawlene) a new frontal dike of 730 m is envisaged (Figure hereafter with a table summarizing the general configuration).

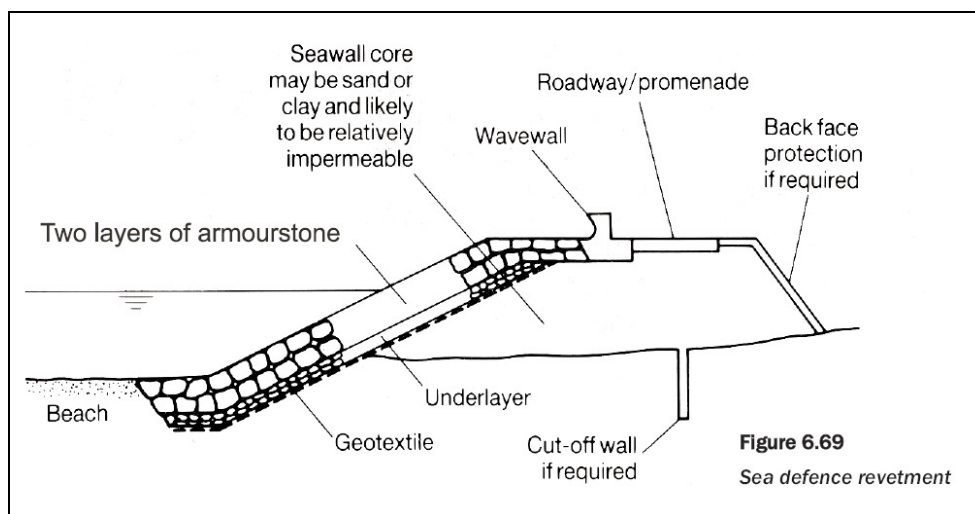


Figure : Coupe type de digue frontale de protection du littoral ; Source : Rock Manual

Table: Summary of the general configuration of the dike planned in Thiawlene (Rufisque)

| General Configuration                                    | Length (m) |
|--|------------|
| Total Length of the zone to be protected (m)             | 730        |
| Width except wall and walk and riprap (m)                | 17         |
| Total width (m)  | 22,5       |
| Distance of the structure from the line of reference (m) | + 10       |
| Baseline on which the basis of the work will rest (m ZH) | - 3,40     |

The height of the peak of the dike is set to + 4.50 m ZH based on the following criteria (table below): the amplitude of the tides, the maximum amplitude of the waves, the potential sea rise based on present and future climate change scenarios, *surcote* (local weather conditions) and a safety margin (for example to take into account the phenomenon of compressing which follows construction).

|                           |                    |                          |
|---------------------------|--------------------|--------------------------|
| Mean sea level            | + 1.00 m ZH        |                          |
| Maximum tide range        | + 0.80 m           |                          |
| Sea level rise            | + 0.50 m           |                          |
| Wave amplitude            | + 1.40 m           | (H <sub>s</sub> = 2,8 m) |
| Surcote and safety margin | + 0.80 m           |                          |
| <b>TOTAL</b>              | <b>+ 4.50 m ZH</b> |                          |