

Adaptation to coastal erosion in vulnerable areas

Adaptation Fund – Final Evaluation Report



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Executive Summary:

Introduction of the project

The first Adaptation Fund-financed project is entitled "Adaptation to coastal erosion in vulnerable areas" and was implemented in Senegal. Its implementation started in January 2011 with a budget of US\$8,619,000 and was completed in January 2015. The intervention sites are Rufisque, Saly and Joal Fadiouth-Fadiouth. The implementing entity, namely, the Centre for Ecological Monitoring (CSE) was the authority selected by the AF to oversee the management of the project. The CSE selected and worked in close collaboration with three executing agencies, namely the Directorate of Environment and Classified Establishments (DEEC), Green Senegal and Dynamique Women.

Aim of the Terminal Evaluation and methodology used

The aim of this Final Evaluation is to determine: i) whether this AF-financed project met its objectives outlined in the Project Document; ii) if the activities implemented have reduced the vulnerability of the local communities in the intervention sites; and iii) if the benefits derived from the AF-financed project are sustainable. The Final Evaluation is intended to inform: i) the national actors of the strengths and weaknesses of the project and to capitalise on the lessons learned; and ii) inform the AF on the use of the funds allocated to increase resilience of local communities to coastal erosion in three intervention sites located on the Senegalese coastline. The evaluator consulted 12 national institutions, which have been involved in the implementation of the AF-financed project. A focus group was held in each intervention site whereby eight generic questions were asked to the participants who represented different beneficiary groups. The questions were focused on the process of implementing the AF-financed project and the impacts thereof.

Results based on an examination of the Project Document

One of the major shortfalls noted is that the Project Document does not contain detailed descriptions of the project activities, indicators and targets. Consequently, there was limited scope to compare the activities originally intended to those achieved. In addition, the baseline reference studies are predominantly qualitative and comprise limited quantitative information. The limited availability of these elements of the Project Document is largely explained by the fact that the document was compiled hastily following the publication of the tender offer by the AF.

The duration of the project – which was initially approximated at two years – was underestimated in terms of its objectives and the budget allocated. At the time of the formulation of the project, mid-term reviews and annual



financial audits were not required for AF-financed projects with a two-year lifespan. Furthermore, no baseline study was conducted to refine the performance indicators from the project document and measure their baseline level. There is therefore limited quantitative information on the impacts of the AF-financed project and the financial audit report is not yet available.

Results of the adaptation interventions implemented

The involvement of local communities in the design and implementation of the AF-financed project interventions is commended. The beneficiaries have taken ownership of the project, including the ongoing maintenance of the coastal protection measures constructed. This is partly due to the extensive communication and awareness campaigns conducted as part of the project. There has been successful collaboration between the implementing entity and its partners throughout the implementation of the project. And the funds transfer process from the AF to the executing agencies through the CSE was effective and transparent. Additionally, the capacity of the beneficiaries to ensure the ongoing maintenance of the protection measures that were developed has been strengthened, as they have established committees and networks.

Results of the analysis of the impacts of the project interventions

The awareness-raising campaigns focused on the extraction of sand and wastewater management have had positive effects on local communities in the intervention sites. In Rufisque, the intervention measures implemented have prevented major damage, which was anticipated from the recent storms – particularly the centenary swell which occurred in 2014. The intervention measures planned for Saly have not yet been completed as a result of limited funds allocated to this component of the project. Despite the malfunctioning of several elements of the project at this intervention site, the fish processing areas are currently being utilised and approved of by the users. The fishing dock in Joal-Fadiouth has been successfully secured through the implementation of the protection measures around it. There has not been significant rice production as a result of the prevailing climatic conditions, however, the beneficiaries are confident about the upcoming harvest season. The rehabilitation of the fish processing area in Khelcom cannot be evaluated yet as the facility has not been used, although signs of degradation have already been noted.

Main recommendations

Firstly, based on the documents available, the consultations held and field observations made, the fish processing area in Khelcom needs to be operationalised within the coming months. Secondly, to optimise the medium- to long-term benefits of the project, sources of funding need to be identified to reduce degradation to the coastal protection interventions constructed. Thirdly, despite the completion of the AF-financed project, quantitative information on the benefits of the project should be collected to facilitate securing additional funds to maintain, replicate or extend the infrastructures implemented.

The process of implementation adopted in this AF-financed project should be used as a reference for other projects in Senegal. The means of communication implemented and the process of involving of local communities in the project should be replicated in future projects. Additionally, all Project Documents should include a detailed logical framework, a thorough monitoring and evaluation plan, as well as a detailed financial plan for the maintenance of the interventions – if applicable – beyond the closure of the project. Careful attention needs to be paid to the quality of Environmental Impact Assessments to ensure that all aspects of projects that are likely to affect natural resources have been identified and addressed accordingly. Moreover, the integration of planting activities in combination with hard infrastructures is likely to increase the effectiveness of adaptation projects.



Conclusion

The AF-financed project is a first in Senegal in terms of the process of implementation, as well as the nature of the activities undertaken, which have resulted in several technical difficulties. Indeed the monitoring of all interventions and the success of some of them have been limited by: i) limited experience and guidance for the monitoring and evaluation of projects; and ii) incomplete national expertise on coastal protection infrastructure. In spite of the aforementioned challenges, most of the activities have been completed as a result of management efforts by the CSE and the three executing agencies. Consequently, the vulnerability of the local communities to coastal erosion in the intervention sites has been reduced. In addition, Senegal's population has increased knowledge on climate change. The institutional and technical capacity of national institutions and communities has also increased, which will benefit future initiatives at the national and regional scales.



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Acronyms and terminology

AF	Adaptation Fund
COMNACC	Comité National des Changements Climatiques
DEEC	Direction de l'Environnement et des Etablissements Classés
CSE	Centre de Suivi Ecologique
COP	Conference of Parties
FFEM	Fond Français pour l'Environnement Mondial
INTAC	Projet d'Intégration de l'Adaptation au Changement Climatique pour le Développement Durable Sénégal
ISRA	Institut Sénégalais de Recherche Agricole
MEDD	Ministère de l'Environnement et du Développement Durable
NAPA	National Adaptation Plan of Action
NGO	Non-Governmental Organisation
REAL	Réseau des Acteurs du Littoral
SAPCO	Société d'Aménagement et de Promotion des Côte et Zone Touristiques du Sénégal
SOCOCIM	Société Ouest Africaine des Ciments
UEMOA	Union Economique et Monétaire Ouest Africaine
UNFCCC	United Nations Framework Convention on Climate Change



PART 1: INTRODUCTION TO THE PROJECT AND THE UNDERTAKING OF THE FINAL EVALUATION

General information on the project

- Financing: **Adaptation Fund (AF)**
- Type of financing: **Grant**
- Country: **Senegal**
- 1. • Title of the project: **Adaptation to coastal erosion in vulnerable areas**
- In-country designated authority (Focal point): **Mrs Ndiéye Fatou Diaw Guène, Directorate of Environment of Senegal (DEEC)**
- National implementing entity: **Centre for Ecological Monitoring (CSE)**
- Executing agencies: **DEEC, Green Senegal which is a Non-Governmental Organisation (NGO) and Dynamique Femme which is a Community-Based Organisation (CBO)**
- Budget (US\$): **8,619,000**

Structure of the AF-financed project

2. The project entitled “Adaptation to coastal erosion in vulnerable areas” has been implemented in Senegal and is the first project funded by the AF. It is, therefore, the first project funded by an external donor and implemented exclusively by a Senegalese entity. This is a novel way of implementing a project in Senegal. The lessons learned during the implementation of the AF-financed project are of considerable national and international importance.

Following extreme weather events that affected the Senegalese coast in 2004, an evaluation of coastal protection by the Department of Environment in 2007 led to the formulation of this project. The CSE worked in close collaboration with the DEEC on the project proposal to ensure that it would meet the criteria set out by the AF in 2010. Both the CSE and the DEEC agreed that it would be beneficial to involve national institutions with relevant skills, especially with regards to engaging with local communities and public awareness raising. The call for tenders from the AF was for a short period – i.e. ~ 1 week – which largely explains why the activities and indicators are not well-defined.

Milestone	Expected date	Date completed
Project start	October 2010	January 2011
(Mid-Term Evaluation)	October 2011	November 2012
Project completion	October 2012	November 2014
Final Evaluation	At least nine months following the completion of the project	June 2015

Project components	Planned activities	Expected results	Expected budget (US\$)
Rufisque	Action 1.1: Update the technical and detailed feasibility studies for the design of the coastal protection facilities in the areas of Rufisque	<ul style="list-style-type: none"> • People, houses, economic and cultural infrastructures in the 	20,000



	<p>Action 1.2: 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.)</p>	<ul style="list-style-type: none"> • areas of Rufisque are protected against coastal erosion. • The populations are involved. 	2,380,000
	<p>Action 1.3: Cleaning-up of channels, including awareness raising and training activities (Thiawlène)</p>		100,000
Saly	<p>Action 2.1: Carry out and validate the detailed technical feasibility studies for the design of the protection facilities of the coastal areas of Saly</p>	<ul style="list-style-type: none"> • People, houses, economic and cultural infrastructures in the areas of Rufisque are protected against coastal erosion. • The populations are involved. 	100,000
	<p>Action 2.2 : Set up the protection facilities of the vulnerable areas covering hotels, people, poor villages, as well as the fishing docks</p>		2,300,000
	<p>Action 2.3: Assistance in the development of the fishing dock and the fish processing area in Saly</p>		400,000
Joal-Fadiouth Fadiouth	<p>Action 3.1: Study and achieve the anti-salt barriers in the rice-growing areas of Joal-Fadiouth and the other agricultural crops</p>	<ul style="list-style-type: none"> • Rice-growing areas in Joal-Fadiouth are protected against salinization. • The coastal infrastructure is built for the processing activities. • Environmental Impact Assessment studies are conducted and the implementation of the Environmental and Social Management Plan is monitored. • Local population, mainly women, are sensitized and trained. 	700,000
	<p>Action 3.2: Protect and develop beaches and fish processing areas</p>		800,000
	<p>Action 3.3: Restore the cleanliness of the beaches</p>		200,000
	<p>Action 3.4: Awareness and training programme</p>		100,000
Regulations	<p>Action 4.1: 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</p>	<ul style="list-style-type: none"> • 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. 	60,000
	<p>Action 4.2: Dissemination of the elaborated texts</p>		140,000



		<ul style="list-style-type: none"> A good communication effort is made to explain those texts. 	
Information/sensibilisation/formation/communication	Action 5.1: Design and implement the awareness and training programme	<ul style="list-style-type: none"> 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. 	290,000
	Action 5.2: Fine tune and share the suitable communication tools		100,000
	Action 5.3: Inform, sensitize, and train people on the adaptation techniques to climate change in coastal areas		60,000
	Action 5.4: Train the different target groups on the new regulations on adaptation		60,000
Monitoring and Evaluation	Action 6.1: Monitoring/ Follow up		200,000
External Evaluation and audit	Action 6.2: External Evaluation and audit		90,000
Control of realisation	Action 6.3: Control of realisation		100,000
Programme cycle management fees	Programme cycle management fees charged by the N.I.E.		325,000
Project Document Formulation	Programme document formulation and translation into English		94,000
	TOTAL		8,619,000

3. General information on the Final Evaluation

3.1. Aim of the Final Evaluation

The Final Evaluation aims to determine the success of: i) the project interventions in achieving the main objective – which is to reduce the vulnerability of the local communities in the intervention sites to the effects of climate change; and ii) initiatives implemented to promote the sustainability and the replicability of the interventions implemented. The objectives of the Final Evaluation are to:

- evaluate the success of the interventions, as well as promote accountability and transparency of the project to the FA;
- organise and document the experiences and lessons learned to inform the selection, design, implementation and evaluation of future AF-financed interventions;
- determine how the project's achievements contribute to the mandate of the AF;
- promote the use of lessons learned in the decision-making process and to improve ongoing and future projects and programs; and
- assess the relevance, effectiveness and efficiency of the design, objectives and performance of the AF-financed project.

3.2. The mission in Senegal

An analysis of the relevant documents was undertaken including *inter alia* the Project Document, reports documenting the baseline information, the biannual progress reports sent to the FA and the mid-term report. This literature review was undertaken from 25 May to 1 June 2015, which was followed by a mission from 3-12 June



2015. The evaluator consulted the implementing entity as well as all three executing agencies on arrival to Senegal. Thereafter, site visits to the three intervention sites occurred from 4-7 June 2015. A focus group was held with representatives of the beneficiary groups in each site – refer to Appendices 3-5 for more information on field visits. During the second week of the mission in Senegal, a total of 12 consultations were held with the relevant project stakeholders including the AF focal point, the DEEC, representatives of the co-financing projects and the construction managers. The evaluator presented preliminary results to the stakeholders, including the CSE and the three executing agencies on Friday 12 June 2015 – see Appendix 6 for a copy of the presentation.

Throughout the mission in Senegal, the evaluator was accompanied by a national consultant who is also a civil engineer, Mr Mohamadou Ly. He was tasked with the technical evaluation of the protection structures constructed.

3.3. Methodology

Baseline studies are generally undertaken at the outset of the project. Using the same methodology, the status of local communities are measured before project implementation, at mid-term evaluation and at the end of the project lifespan. The data generated by these evaluations are then compared to determine the impact of the project interventions on the vulnerable communities. However, in the absence of a baseline study¹, the aforementioned method could not be applied. Therefore, an alternative approach was used, which involved obtaining information on the impact of the interventions from the focus groups in each site. Representatives from each category of beneficiaries of the AF-financed project – such as fishermen, women processors and women rice farmers – participated in the focus groups.

The use of focus groups is a qualitative research technique that comprises semi-structured interviews with a targeted group². This approach allows for the collection of detailed information on a targeted subject and assesses the needs, expectations, level of satisfaction, opinions and motivations of the group. This form of consultation comprises open questions that explore the different points of view and experiences of the participants. While participants of the focus group are carefully selected as they need to be related to the topic of investigation, participation is voluntary. In terms of the Final Evaluation of the AF-financed project in Senegal, the focus groups method has facilitated: i) meeting as many beneficiaries as possible within a given period of time; ii) determining whether there is understanding among the beneficiaries, and between the beneficiaries and the executing agencies; and iii) assessing the beneficiaries' knowledge of the AF-financed project.

The following questions have been asked to the participants in each focus group:

- What was your involvement in the development of the project?
- What do you think of the manner in which the project was implemented?
- What do you think of the way in which the project was implemented?
- Do the intervention measures address your most urgent needs in terms of climate change and environmental challenges faced?
- Do you think that the coastal protection intervention measures implemented have or will effectively protect you against coastal erosion?

¹ Since the undertaking of this AF-financed project, the more recent ones require that a baseline study be carried out at the outset.

² Moreau, A., Le Goaziou, M., Dedienne, M., Labarère, J., Letrilliart, L., Terra, J. 2004. Méthode de recherche: S'appropriier la méthode du focus group. *Recherche en médecine générale*. 18. 382-384.



- How have the interventions implemented through this project improved your quality of life (e.g. increased household revenue or improved sanitary conditions)?
- Has there been any degradation to the interventions implemented?
- As a result of the awareness campaigns conducted through this project, have you noticed any behavioural changes in your household or within the community?
- If the project had to start all over again, how could it be improved?

Further questions – specific to each intervention site – were asked to the focus group. The size of the focus group varied from 11-25 participants in Rufisque and Joal-Fadiouth respectively. The information collected during the focus group consultations is deemed accurate, unless contested by any of the participants. Each focus group consultation lasted approximately two to three hours. The only beneficiary group that was not consulted for this Final Evaluation is the hotel group. The reason being that their representatives were late to the scheduled appointment and were not available to meet at any alternative time for the duration of the mission.

3.4. Main challenges

The lack of accurate and quantitative data on the baseline situation has limited the evaluation of the impacts of the interventions on the local communities in the intervention sites. This has led to the AF-financed project's performance being solely based on the information gathered from the relevant stakeholders and field observations. One of the major challenges has been the absence of quantitative indicators and targets to be reached at the end of the AF-financed project. Furthermore, the financial data available to analyse the use of funds was limited as the financial audit has not yet been undertaken.



PART 2: OUTCOME OF THE EVALUATION

Comparison between the expected and achieved results

4.1. Analysis of the Project Document: Indicators, targets, activities and risks

- Budget:

4. Two of the national institutions involved in implementing the AF-financed project noted that a larger proportion of funds should have been allocated to project management. However, shortcomings in terms of management costs are largely attributed to the extended implementation period of the project.

There was no detailed budget included in the Project Document, instead a total sum was allocated to each activity. The budget is limited in terms of the amount allocated to the construction of protection measures, awareness-raising and capacity-building of the committees established in each intervention site or the recruitment of experts. Consequently, there was limited scope to compare the funds initially planned to those used in the implementation of the project interventions.

- Logframe:

As stated in Section 3.4, the project activities and indicators described in the Project Document are not detailed. In addition, the targets for the indicators of the AF-financed project are qualitative. The baseline levels of these indicators have not been subjected to rigorous and accurate measurement, as baseline studies were not conducted. The logframe is therefore not an effective tool for measuring the performance of the project. Moreover, several errors were noted in the logframe, and the AF's monitoring indicators including *inter alia* an estimated area of 6,000 km² in Rufisque that is vulnerable to flooding and the number of anti-salt dikes to be constructed in Joal-Fadiouth. According to the CSE, the error pertaining to Joal-Fadiouth is a typo as the construction of one anti-salt dike was required to release land for rice production. This particular error has created uncertainty regarding the objectives of the AF-financed project. It is important to note that the distribution of activities as stated in the Project Document and the quarterly reports differ from the work plan validated by the AF and the CSE at the implementation of the project. The activities presented in the table below correspond to those included in the work plan outlined in the Memorandum of Understanding between the AF and the CSE, which was approved in November 2010.

- Risks:

The risks anticipated for the project have been appropriately assessed, specifically the “awareness level of the people and decision-makers on climate change”, “lack of coordination between the implementing bodies”, “local governments do not accept the project” and “delays in the disbursements of funds”. The mitigation strategies proposed to those risks have been adequately implemented. One of the risks identified, namely, “budget forecasts not adequate”, was indeed a problem in the implementation of seawalls in Saly as only a proportion of the intended coastal protection interventions was realised. The mitigation strategy proposed for this specific risk was not adequate to prevent the occurrence of this risk. The mitigation strategy for the risk entitled “conflict of the management and maintenance of facilities between the private sector, communities and local government as well as the state management of the project depending heavily on subcontracting” is that the local communities and municipalities are committed to maintaining the coastal protection interventions in their respective sites. However, the capacity of local communities and the municipalities to maintain the coastal protection structures is limited. For example, the municipalities of the intervention sites do not have the financial capacity to repair any considerable damage to the coastal protection infrastructures. Therefore, the mitigation strategy should have



addressed the financial capacity of stakeholders, including a financial strategy, with a clear definition of the roles of the stakeholders for the relevant activities to ensure the maintenance of the coastal protection structures.

4.2. Overview of the expected and realised targets

Activity	Indicator	Baseline level/information	Expected target	Targets achieved (1: not realised; 2: partially realised; 3: realised to a large extent; 4: realised)
Rufisque				
1.1 Update the technical and detailed feasibility studies for the design of the coastal protection facilities in the areas of Rufisque.	Number of study reports.	One study validated for Rufisque.	The detailed technical feasibility studies for the protection of the coastal areas of Rufisque are updated.	Study report updated for Rufisque (4).
1.2 Building up of the coastal protection facilities in the areas of Rufisque. The target areas host houses, economic and cultural infrastructures (fish processing areas, fishing dock, cement factories, cemeteries, etc.).	Length of protected coast (in metres).	6,000 km ² of areas threatened by flood ³ .	The protection works of the coastal areas of Rufisque are built (381 metres of wall built by the AF-financed project).	The construction of a 730 metres long dike from three different sources of financing. The funds provided by the AF contributed to the construction of 234 metres of the dike (4).
1.3 Cleaning up of the canals and connection with the sea (with a strong involvement of local populations).	Number of channels cleaned up.	Coastal facilities and human settlements facing high threats.	The waste ways of rainwater are cleaned up and connected to the sea.	There has been ongoing cleaning up of two canals – with a total length of 523 metres – on a quarterly basis by the sanitation committee and supported by Green Senegal from 2011 to 2012. These two canals have since been connected to the sea and/or dike (4).
Saly				

³ The baseline level was reported here as written in the project document. However, according to the stakeholders, it is a typo. The figure, i.e, 6,000 km², actually corresponds to the total surface of land threatened by flooding in coastal areas in Senegal. Therefore, this baseline level is not appropriate for this activity and should not be considered.



Activity	Indicator	Baseline level/information	Expected target	Targets achieved (1: not realised; 2: partially realised; 3: realised to a large extent; 4: realised)
2.1 Carry out and validate the detailed technical feasibility studies for the design of the protection facilities of the coastal areas of Saly.	Study Reports.	No study was undertaken in Saly.	The detailed technical feasibility studies for the protection of the coastal areas of Saly are completed and validated.	The feasibility study for the construction of the seawalls was undertaken by CEREEQ in 2011 (4).
2.2 Set up the protection facilities of the vulnerable areas covering the hotels, people, and poor villages, as well as the fishing docks.	Length of the coastline protected (in metres).	3 km ² of areas threatened by flood.	The protection works of the coastal areas of Rufisque are completed.	The construction of nine seawalls was required to protect the selected hotels and village –the fishing dock is situated between the hotels and the village. Two seawalls providing 200 metres of protection have been erected (2).
2.3 Assistance in the development of the fishing dock and the fish processing area.	Establishment of a sound fishing dock and a good fish processing area.	Destruction of the fishing docks and fish processing areas due to sea level rise.	The development of the fishing dock and the fish processing area is done.	The fishing dock has been rehabilitated including the provision of drying grids, washing basins, access to potable water and solar lighting. The wall of the fishing dock has been rehabilitated. In addition, following degradation of the newly constructed wall of the fishing dock, a retaining wall was constructed. Laterite blocks were carefully positioned to protect the retaining wall against the action of waves (4).
Joal Fadiouth				
3.1 Study and achieve the anti-salt barriers in the rice-growing areas of Joal Fadiouth and other agricultural crops.	Study reports, number of curbs and dikes constructed.	Rice-growing activities affected by intrusion of saline waters.	The technical studies and the dikes to prevent salt water intrusion into the rice-growing areas of Joal-Fadiouth are done.	The technical feasibility study was undertaken by 2E International in 2011 and the dike was subsequently constructed (4).



Activity	Indicator	Baseline level/information	Expected target	Targets achieved (1: not realised; 2: partially realised; 3: realised to a large extent; 4: realised)
3.2 Protect and develop beaches and fish processing areas.	The curbs for protected beaches and the fish processing areas are developed.	Drainage of rice growing areas is difficult.	The protection and development of beaches and fish processing areas are completed.	<p>According to the CSE, while the project was being formulated, the fish processing area extended to the beach. It was therefore proposed to construct coastal protection structures. However, this was no longer the case when the implementation of the project started thereby making this indicator obsolete.</p> <p>The fish processing area in Khelcom has been rehabilitated with the addition of 90 improved fish smoking kilns, a waste water disposal system, wells, drying grids, as well as the rehabilitation of the shed infrastructure (4).</p>
3.3 Restore the cleanliness of beaches.	The setting up of a rational and effective waste management programme in the beach is undertaken.	The beach is used as lavatory and the waste management system is very poor.	A waste management system is developed and implemented.	Tools such as spades and shovels have been provided to all seven coastal sanitation committees. A donkey/horse cart has also been provided to each coastal sanitation committee. In addition, they have received training on environmental management (4).
3.4 Awareness raising and training programme.				<p>The following training was undertaken within the intervention sites:</p> <ul style="list-style-type: none"> - Institutional management (44 participants); - An understanding of coastal erosion (31 participants); and - Coastal management(40 participants). <p>Training on reforestation was undertaken with 42</p>



Activity	Indicator	Baseline level/information	Expected target	Targets achieved (1: not realised; 2: partially realised; 3: realised to a large extent; 4: realised)
				participants to complement the dike. The share of women who attended this training session is unavailable as the information is not aggregated per gender and intervention site (4).
National				
4.1 Design, fine tune, and strengthen the regulations on the management of the littoral, by taking into account the CC dimension: Environmental Code, the law on the littoral, and other codes.	Number and nature of the legal materials drawn up and in force.	No (or inadequate) legal materials dealing with the management of the littoral and taking into account climate change.	The legal materials dealing with the management of the littoral and taking into account climate change dimension are drawn up.	The Environmental Code has been revised and the Law on the littoral has been ratified in 2012 (4).
4.2 Disseminate the elaborated texts.	Number of popularization sessions and participants.	The local communities in the intervention sites have limited information about the legal material.	The texts drawn up are popularized.	An awareness-raising campaign on both legal material has been undertaken in each intervention site. A total of 31 participants have been trained. An inception workshop and a field visit to the intervention sites were held for the relevant officials and the economic and social development ministries present the legal texts and raise awareness of coastal erosion (4).
5.1 Design and implement the awareness and training programme.	Study Report.	Education on climate change adaptation is still a national priority.	A training and Sensitization programme is designed and carried out.	Over 10 training/sensitisation sessions held (4).
5.2 Fine tune and share the suitable communication tools.	Number and nature of the communication	Adaptation programmes/projects still lack	Adequate	- 41 radio broadcasts held (14 in Rufisque, 14 in Saly and 13 in Joal-Fadiouth);



Activity	Indicator	Baseline level/information	Expected target	Targets achieved (1: not realised; 2: partially realised; 3: realised to a large extent; 4: realised)
	tools developed.	adequate tools for taking up and disseminating learned lessons on community adaptation.	Communication tools are developed and shared.	- Six types of brochures distributed; - Mobilisation of school students; - Community discussion sessions (4).
5.3 Inform, sensitise and train people on the adaptation techniques to climate change in coastal areas.	Number of sessions /workshops held or participants.	Cross learning mechanisms are not very well known.	People are informed, sensitized and trained on the adaptation techniques to climate change in coastal areas.	Over 10 training/sensitisation sessions were held with a total of 149 participants (4).
5.4 Train the different target groups on the new regulations on adaptation.	Number of sessions /workshops held or participants.		The different target groups are trained on the new regulations on adaptation to climate change.	Eight target groups participated in the training sessions on the content and the revised texts of the Environmental Code and the Law of the Littoral. The following target groups participated: - Municipal technicians /specialists; - Local state services (decentralised authorities); - Civic organisation groups; - Cultural and sports groups; - Community-based organisations and neighbourhood committees - Development committee of Thiawlène; - Network of coastal stakeholders; - Local fishing committees (4).



4.3. Overview of AF's expected and realised targets

Result	Indicator	Baseline level	Target expected	Target realised
Increased adaptive capacity within relevant development and natural resource sectors.	Physical infrastructure improved to withstand climate change and variability-induced stress.	1 (none in Saly and 1 basic dike in Rufisque).	5 (considerable improvement).	Rufisque: 5 (considerable improvement); Saly: 2 (slight improvement).
Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability.	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change.	0 protection infrastructure in Saly; 1 dike in Rufisque.	2 coastal protection infrastructures.	Rufisque: 1 dike; Saly: 1 protection wall and 1 seawall; Joal-Fadiouth: 1 gabion wall to protect the fishing dock.
Increased adaptive capacity within relevant development and natural resource sectors.	Physical infrastructure improved to withstand climate change and variability-induced stress.	1 (rice-growing area abandoned as a result of salt water intrusion).	5 (considerable improvement).	Joal-Fadiouth: 3 (mild improvement). There were no yields from the rice crops in 2014. However, the beneficiaries are confident that the cultivatable land released by the dike will soon be conducive to high yield rice production.
Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability.	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change.	No infrastructures to prevent salt water intrusion.	5 infrastructures to prevent salt water intrusion [According to the stakeholders, this is a typo as one anti-salt dike was required and initially planned].	Joal-Fadiouth: 1 anti-salt dike of 3,3 km in length.
Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability.	No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies.	1 artisanal fish processing area, 1 fish processing area and a fishing dock in poor conditions, limited knowledge of the effects of climate change and	2 fish processing areas developed, 1 rehabilitated fishing dock and several awareness-raising campaigns.	Joal-Fadiouth: 1 fish processing area and 1 fishing dock; Saly: 1 fish processing area, 3 awareness-raising campaigns on the effects of climate



Result	Indicator	Baseline level	Target expected	Target realised
		adaptation techniques.		change and adaptation techniques. (1 in each intervention site).
Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level.	Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses.	2: Partial knowledge.	4: Considerable knowledge.	4 for coastal erosion; 3 for climate change.
Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level.	No. and type of risk reduction actions or strategies introduced at local level.	Education on adaptation to climate change remains a national priority. There are no appropriate tools for identifying, taking up and disseminating learned lessons on adaptation techniques in past/ongoing projects. Limited knowledge exchange mechanism.	Training and awareness programme developed and implemented. Appropriate communication tools developed and disseminated. Local communities are informed and trained on adaptation techniques to climate change in coastal areas. The target groups are trained on the new regulations on adaptation in Senegal.	Over 10 training sessions; 14, 14 and 13 radio broadcasts in Rufisque, Saly and Joal-Fadiouth respectively. 1-2 home visits per site; 6 types of brochures produced and disseminated; awareness raising within schools, 1 training session in each intervention site on the new regulations.

5.

Implementation of the project

5.1. Estimation of the number of beneficiaries of the AF-financed project

The number of beneficiaries of the AF-financed project is unknown as a result of the absence of baseline studies. The following estimates have been made based on several consultations conducted with the stakeholders during the mission in Senegal:

- Rufisque: A total of 151 homes – with a total of 1,510 people as the average household size is estimated at 10 – are now protected against coastal erosion through the construction of a dike. Approximately 500 fishermen benefit indirectly from the increased abundance and size of fish as a result of the construction of the dike.
- Saly: The fish market in Saly is visited by ~100 boats which equates to ~250 fishermen. The size of the fish processing women's group currently operating at the rehabilitated fishing dock is estimated at 50.



- Joal-Fadiouth: 60 women utilise the fish smoking kilns. A total of 47 women has been selected to benefit from rice production on the land released from the anti-salt dike. A large number of fishermen benefit from the rehabilitated fishing dock. Joal-Fadiouth is the only fishing port in Senegal to be operational all year round and is therefore used on a periodic basis by several fishing communities. Nevertheless, the stakeholders consulted during the mission estimated that ~2,000 large boats – or ~10,000 fishermen – make use of the fishing dock. The number of fishermen benefitting from the fishing dock varies depending on the time of the year and if the smaller boats are taken into account.

5.2. Participation of the beneficiaries

Each beneficiary group consulted at the intervention sites has confirmed that they have been involved in the project at every stage from its conception to completion. Approximately 700 people participated in the inception workshops in each site and local communities were subsequently consulted on the design of activities to identify their most urgent needs. Where required, changes were made to the activities to address the needs of the local communities. Consequently, each of the interventions implemented corresponds to the request made by the communities at the beginning of the project. For example, the construction of three shelters was initially proposed for the fish processing women in Khelcom, however, they requested that a shelter and a shop be constructed instead. The representatives of every beneficiary group participated in the project steering committee and were therefore involved in all decision-making processes. The ownership of the project by local communities is largely attributed to their involvement throughout the implementation of the project.

However, according to the information collected in Saly, the hotel group and the villagers are not satisfied with the AF-financed project. This potentially means that they have not been adequately involved in the decision-making process and therefore do not understand why some of the objectives of the project were not met. Furthermore, several stakeholders consulted in Joal-Fadiouth stated that the fish smoking kilns financed by the AF do not meet the needs of the local fish processing community because they are of lower capacity than the traditional kilns. It is to be noted that the local communities were consulted regarding the trial of the fish smoking kiln prototype and their recommendations were factored in to improve the prototype⁴. However, the consultation process failed in incorporating the beneficiaries' needs into the equipment provided. It is recommended that this failure in the consultation process be further investigated to identify the reasons why the fish smoking kilns financed by the AF are not currently utilised.

5.3. Awareness-raising campaigns

One of the strengths of the AF-financed project is the intensive communication campaigns implemented in each intervention site by Green Senegal and Dynamique Femme. The following activities have been undertaken as part of the communication campaign of the AF-financed project:

- At the outset of the AF-financed project, home visits were conducted to the following: i) 49 community leaders' homes in Joal-Fadiouth; ii) 151 households in the vicinity of the dike constructed in Rufisque; and iii) 71 households in the district of Saly-Koulang and 54 in the district of Niakh Niakhal. In Saly and Rufisque, each household was visited at least once. Two visits were made to those who were reluctant to the proposed activities.

⁴ The evaluator noted that there were several initial designs of fish smoking kilns detailed in the Feasibility Study. The conceptual design of the kilns comprises two drawers while the kilns financed by the AF contain one drawer. See: I. Sarr and Co., 2012. Planning Feasibility Report site Khelcom in Joal. Joal, Senegal.



- Notebooks and backpacks with the AF logo were distributed to the 400 best-performing students with 167 of them receiving special prizes during awareness-raising workshops held in schools.
- T-shirts and caps were distributed to 2,000 people as a reward for their environmental initiatives.
- A total of 640 bins with the AF logo, rakes, wheelbarrows and shovels were distributed to the neighbourhood committees in the intervention sites.
- 14 information boards on the AF-financed project have been displayed in the intervention sites.
- Consultation sessions were held with representatives of the beneficiary groups to inform them of the project activities thereby increasing their support for the implementation of the project.
- Cultural events such as skits, regattas, traditional wrestling galas and traveling exhibitions were organised to inform local communities about the project.
- 28 radio broadcasts – each 45 minutes long – which included interviews with the project team as well as the beneficiaries were recorded and broadcasted on two occasions in Rufisque and Saly and 13 times in Joal-Fadiouth. The recordings were subsequently provided to the CSE on CD.
- 31 journalists from 20 media organisations were trained on environmental issues and climate change to ensure that the right information is disseminated to local communities. They now form part of the network of coastal journalists.

Awareness campaigns were conducted in the intervention sites on the following subjects: i) institutional management including the organisational skills required for the implementation of the AF-financed project; ii) the National Adaptation Plan of Action (NAPA); iii) coastal erosion; iv) the effects of climate change on the fisheries sector; v) hygiene and fish products (which was extended to the neighbouring communities); vi) training on gender and AIDS; and vii) the Environmental Code and the Law of the Littoral.

5.4. Coordination between the relevant stakeholders

5.4.1. Roles of the implementing entity and executing agencies

The implementing entity, namely the CSE, was responsible for: i) coordinating the three executing agencies; ii) producing the necessary reports; and iii) ensuring that the activities implemented on-the-ground are in line with the Project Document. The funds transferred by the AF were managed by the CSE and thereafter allocated to the executing agencies as per an agreement between the entity and the agencies. The executing agencies were involved in recruiting construction companies and consultants to undertake studies, whilst the CSE had oversight functions regarding the contracting of such service providers. The CSE also provided technical input to finding solutions to the challenges encountered, especially regarding the construction of seawalls in Saly. The implementing entity worked in close collaboration with the DEEC in selecting two additional executing agencies, i.e., Green Senegal and Dynamique Femme. The duties/responsibilities of the three executing agencies were as follows:

- Green Senegal was responsible for information communication – i.e. displaying information panels to increase the visibility of the AF-financed project, social mobilisation and to facilitate the necessary arrangements to be made by the local authorities – awareness and training in Rufisque and Saly. They were also responsible for facilitating the cleaning up of waterways in Rufisque. Green Senegal's role extended to that of co-construction manager alongside others for the rehabilitation of the fish processing area in Saly⁵.
- The DEEC was responsible for coordinating the implementation of field activities in Rufisque and Saly⁶. It was also the primary construction manager for the AF-financed project operating in each of the intervention sites – i.e. CEREEQ and Route CET.

⁵ Green Senegal. 2011. Rapport de démarrage de l'ONG Green Senegal. Thiès, Senegal.

⁶ DEEC. 2011. Rapport de démarrage. Dakar, Senegal.



- Dynamique Femme was responsible for overseeing the interventions planned in Joal-Fadiouth including the construction of an anti-salt dike, rehabilitation of the fish processing area in Khelcom, as well as the rehabilitation of the fishing dock⁷.

5.4.2. Coordination between the implementing entity and agencies

The combination of government and non-government institutions has ensured that the progress of the AF-financed project was not considerably affected by a change in government in 2012. This change, however, delayed the implementation of activities. For example, an overhaul of the management team within the DEEC led to delays in the implementation of activities in Saly. However, through the ongoing work of the CSE, Green Senegal and Dynamique Femme, the change in government did not directly affect the project's activities.

The executing agencies confirmed that they were satisfied with the complete transparency in CSE's disbursement process, in terms of which CSE needed the approval of the executing agencies before processing disbursements and *vice versa*. They were also satisfied that the CSE, the DEEC, Green Senegal and Dynamique Femme led the AF-financed project.

5.4.3. Procurement process

The CSE's Procurement and Contracting Manual was applied to the AF-financed project. This process allowed more flexibility than the Senegalese government's procedures. Consequently, the recruitment and disbursement processes were less lengthy than for projects implemented by government institutions. According to the executing agencies, competent candidates responded to each call for proposals.

5.4.4. Project steering committee

The project steering committee was chaired by the respective mayor of each intervention site. Each committee met on a biannual basis and consisted of the executing agencies and representatives of the beneficiary groups. All stakeholders and beneficiary groups were represented at the national project steering committee which was chaired by the "Comité National sur les Changements Climatiques" (COMNACC)

5.5. Finances

Based on the requirements of the AF at the time the project was being launched, annual financial audits were not required. Consequently, the first audit will be conducted in the near future. The CSE is in the process of gathering all the supporting documents required for this audit. As this is currently being undertaken, the evaluator did not have access to accurate data on expenditures accrued during the project. The financial assessment is therefore limited to the information gathered from biannual reports and consultations with relevant stakeholders. It is important to note that the limited information available does suggest that the funds provided have been fully optimised.

As the costs of several activities were initially overestimated, the remaining funds were used to finance complementary activities. These additional activities include *inter alia*: i) the construction of a protection wall for the fish processing area in Joal-Fadiouth; ii) the production of maintenance manuals for each of the coastal protection infrastructures constructed; and iii) the establishment of local management committees responsible for the ongoing maintenance of infrastructure constructed by the AF-financed project. These activities will increase the sustainability of the project.

⁷ Dynamique Femme. 2011. Rapport de démarrage. Joal, Senegal.



The financial audit will be conducted through an analysis of the total expenditure. Based on the information available to the evaluator at the time of the Final Evaluation, the budget allocated for each of the project activities was within $\pm 0-10\%$ – with an average variance of $\pm 3.6\%$ – for all but three of the activities. Out of those three activities, the most significant budget change applies to the dissemination of the national legislation on coastal management. As these legal texts are still being validated, they were not disseminated during the implementation period of the AF-financed project.

Project component	Planned activities	Expected budget (US\$)	Actual budget (US\$)
Rufisque	Action 1.1 : Update the technical and detailed feasibility studies for the design of the coastal protection facilities in the areas of Rufisque	20,000	20,321
	Action 1.2 : 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.)	2,380,000	2,377,632
	Action 1.3 :Cleaning-up of channels, including awareness raising and training activities (Thiawlène)	100,000	103,133
Saly	Action 2.1 : Carry out and validate the detailed technical feasibility studies for the design of the protection facilities of the coastal areas of Saly	100,000	72,965
	Action 2.2 : Set up the protection facilities of the vulnerable areas covering hotels, people, poor villages, as well as the fishing docks	2,300,000	2,074,725
	Action 2.3 : Assistance in the development of the fishing dock and the fish processing area in Saly	400,000	399,164
Joal-Fadiouth – Fadiouth	Action 3.1 : Study and achieve the anti-salt barriers in the rice-growing areas of Joal-Fadiouth and the other agricultural crops.	700,000	695,222
	Action 3.2 : Protect and develop beaches and fish processing areas.	800,000	865,060
	Action 3.3 : Restore the cleanliness of the beaches	200,000	200,000
	Action 3.4 : Awareness and training programme	100,000	102,569
Regulations	Action 4.1 : 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	60,000	60,508
	Action 4.2 : Dissemination of the elaborated texts	140,000	17,374
Information/sensibilisation/formation/communication	Action 5.1 : Design and implement the awareness and training programme	290,000	277,792
	Action 5.2 : Fine tune and share the suitable communication tools	100,000	101,082
	Action 5.3 : Inform, sensitize, and train people on the adaptation techniques to climate change in coastal areas	60,000	59,997
	Action 5.4 : Train the different target groups on the new regulations on adaptation	60,000	59,965



Project component	Planned activities	Expected budget (US\$)	Actual budget (US\$)
Monitoring and Evaluation	Action 6.1: Monitoring/ Follow up	200,000	206,560
External Evaluation and audit	Action 6.2: External Evaluation and audit	90,000	90,000
Control of realisation	Action 6.3: Control of realisation	100,000	132,746
Programme cycle management fees	Programme cycle management fees charged by the N.I.E.	325,000	325,000
Project Document Formulation	Programme document formulation and translation into English	94,000	94,000
	TOTAL	8,619,000	8,335,815

5.6. Co-financing

Baseline projects and co-financing agreements are not identified in the Project Document. Nevertheless, the construction of the anti-salt dike in Rufisque received co-financing from two donor-funded projects, namely: i) Union Economique et Monétaire Ouest Africaine (UEMOA); and ii) Projet d'Intégration de l'Adaptation au Changement Climatique pour le Développement Durable Sénégal (INTAC).

5.7. Monitoring and Evaluation

A shortcoming of the AF-financed project is the fact that a thorough monitoring and evaluation system was not implemented. This is the result of the absence of clear monitoring and evaluation guidelines – such as quantitative indicators, baseline levels and mid-term and end of project targets – in the logframe. A comprehensive baseline study would have counter-balanced the weaknesses identified in the logframe, as it would have necessitated a revision of the logframe as well as the updating of the baseline levels. However, in the absence of baseline studies, there was no basis for thorough monitoring of the impacts of the interventions at the outset of the project. Several attempts have subsequently been made to address this gap, including reports on the reference situation compiled by Green Senegal^{8, 9, 10}. However, these studies are qualitative in nature and therefore do not complement the quantitative measurements required to demonstrate the impacts of the AF-financed project. Similarly, the NGO Enda Energie – an NGO which is part of the German Watch Network – conducted a brief study in 2013 that proposed four categories of indicators, including: i) institutional; ii), economic; iii), environmental; and iv) social¹¹. Unfortunately, based on the documentation available on the AF-financed project, these indicators were not measured¹². In addition to improving the experience gained through the implementation of the project, a thorough monitoring and evaluation system is required to demonstrate the benefits of the project and the allocation of funds. This would also facilitate obtaining additional funds for future projects.

⁸ Green Sénégal. 2011. Rapport situation de référence de la commune de Joal. Thiès, Senegal.

⁹ Green Sénégal. 2011. Rapport situation de référence de la commune de Rufisque-Est. Thiès, Senegal.

¹⁰ Green Sénégal. 2011. Rapport situation de référence de la commune de Saly. Thiès, Senegal.

¹¹ Enda Energie. 2013. Project “Adaptation to coastal erosion in vulnerable areas in Senegal” Joal, Saly and Rufisque: Study on the identification of impact indicators of the adaptation to climate change project. Adaptation Fund NGO Network. Dakar, Senegal. Octobre, 2013.

¹² Enda Energie. 2014. Senegal Baseline update. Adaptation Fund NGO Network. Dakar, Senegal. Octobre, 2014.



There is also a lack of documentation on the awareness campaigns conducted in the AF-financed project. For example, the list of individuals who attended the awareness-raising campaigns are not readily available. Videos of the campaigns are available, however, such a tool is not appropriate to generate quantitative data. The impacts of the awareness-raising campaigns on the knowledge of a particular topic or the behaviour of the beneficiaries have not been documented. The lack of documentation of the campaigns has no negative impact on the activity undertaken. However, this limits the potential to replicate the best practices observed at the national scale.

Quality of the coastal protection structures constructed

The civil engineer who accompanied the evaluator on mission in Senegal was responsible for the technical evaluation of the quality of the coastal protection infrastructures financed by the project.

6. *The dike constructed in Rufisque*

The dike was deemed to be in good working condition by the civil engineer. The structure is strong, sustainable and adequately addresses the local community's needs. The destabilisation of several small blocks of the structure, which have subsequently been deposited on the esplanade, has not compromised its quality. It was, however, noted that the obstruction of openings located between basalt blocks as a result of the wastewater discharge, is likely to occur. Such obstructions potentially threaten the sustainability of the structure through reducing the permeability over the medium-term. In addition, there is a risk of destabilisation of the promenade located on the esplanade because of erosion caused by stagnation of rainwater or seawater. This is largely attributed to the lack of a drainage system on the esplanade, which should be included in future development initiatives.

The following recommendations were made by the civil engineer for the ongoing maintenance of the dike in Rufisque:

- carefully follow the recommendations included in the detailed maintenance manual compiled by the CSE;
- conduct a topographical survey of the profiles of the dike on a two year basis or after a heavy storm;
- conduct an underwater inspection of the dike's base every five years or after a heavy storm; and
- complete the promenade as soon as possible to prevent the accumulation of garbage and stagnant water on the structure.

The seawalls in Saly

Several shortcomings pertaining to the proposal for bathymetric surveys were identified by the civil engineer. These have led to challenges experienced during the construction of the seawalls. One of the main technical problems identified is the material selected and used for the construction of the seawalls. The cost of construction of nine seawalls with the material chosen at the launch of the project – i.e. basalt – was significantly higher than the initial budget allocated to this particular activity. Basalt was initially chosen over laterite for its resistance. However, the construction manager proposed the use of laterite, which is relatively cheaper, but its efficiency has not yet been proven. The construction manager did not provide a technical note to detail the changes to the activity and the rationale thereof. Therefore, two basalt seawalls were constructed with the budget allocated. They are resistant to wave actions and currently do not present any signs of alteration.

The following recommendations were made by the civil engineer for the ongoing maintenance of the two seawalls in Saly:

- carefully follow the recommendations included in the detailed maintenance manual compiled by the CSE; and
- conduct a topographical survey of the profiles of the seawalls on a two year basis or after a heavy storm.



The anti-salt dike in Joal-Fadiouth

The civil engineer concluded that the design and construction phases of the anti-salt dike have been undertaken in an appropriate manner. The structure financed by the AF project is simple and effective in protecting the land upstream against saltwater intrusion. However, water intrusions have been observed at the base of the rainwater discharge points. According to the civil engineer, the water intrusions observed should be filled immediately, as they will potentially threaten the stability of these particular sections in the event of heavy rains. In addition, the effectiveness of the anti-salt dike may be reduced in the short-term as a result of the compaction of the structure, which is largely attributed to the use of carts and cars. Saltwater intrusion into the supposedly protected lands was observed from the end point of the dike for a stretch of approximately 500 metres. Although this risk had been highlighted during the design of the structure, the budget allocated for this particular activity did not allow for the extension of the dike beyond the 3.3 km as initially planned.

The recommendations made by the civil engineer for the maintenance of the anti-salt dike include:

- carefully follow the recommendations included in the detailed maintenance manual compiled by the CSE;
- strengthen weirs to further prevent water intrusions; and
- prohibit the use of vehicles on the dike as they eventually lead to a change in its profile and localised weakening of the structure.

The dike constructed to protect the fishing dock in Joal-Fadiouth

The dike financed by the AF-project is a basic gabion infrastructure measuring one metre in height and breadth and 382 metres in length. The benefits of the structure were apparent following its construction, after which rapid beach replenishment occurred between the fishing dock and the dike. Large quantities of sand were noted on the artificial beach, which was replenished using shells.

The main recommendation made by the civil engineer for the ongoing maintenance of the fishing dock in Joal-Fadiouth is to ensure the monitoring of the cage retaining the gabions, especially for those portions that have not been entirely replenished.

Benefits observed to date

7.1. Benefits observed out of those expected

7.1.1. Impact of the awareness-raising campaigns

Awareness campaign on the effect of sand extraction

Awareness campaigns highlighting the impacts of sand extraction on coastal erosion, in conjunction with strengthened control measures and the registration of carts, has resulted in the halting of sand extraction by local communities in all three intervention sites. This sand was used intensively for the completion of the façades of houses. However, it was noted during the focus groups that people from neighbouring villages occasionally extracted sand in Rufisque and Joal Fadiouth. As a result, the leaders of the neighbourhood committees of Rufisque subsequently had a meeting to reinforce coastal surveillance. During the focus group meeting, the mayor of Joal-Fadiouth announced that a decree is currently being developed to systematically fine people caught partaking in sand extraction activities.

Awareness-raising campaign on waste water discharge

Awareness-raising campaigns conducted in 2011 have halted activities that result in the discharge of sewage and solid waste in the dike constructed in Rufisque. However, as an alternative system has not yet been implemented



and despite the community's best efforts over a two-year period to use the channels on both ends of the dikes, traces of wastewater discharge have been noted at night. The system adopted by the local community requires people to walk distances of ~300 metres with their waste containers several times a day to discharge wastewater at the ends of the dikes. At the focus group meeting held in Rufisque, it was announced that a wastewater collection point would be constructed to meet the local communities' demands, thereby reducing their movement to and from the dike. Additionally, the campaign helped to improve waste management practices by teaching women to filter waste before discharging it. Although this method has since been adopted by some women, several other awareness campaigns will be required to promote this method and ensure that it is maintained in the long-term.

Other awareness-raising campaigns

The awareness-raising campaigns on management capacity in environmental management have benefitted individuals who apply these practices in running their local associations and committees. This increased capacity has facilitated the implementation of micro-finance schemes for women in Rufisque and Saly. The local communities in the intervention sites have confirmed that they have an increased knowledge of the impacts of climate change, particularly coastal erosion, because of the awareness-raising campaigns. However, this increased knowledge could not be assessed by the evaluator due to limited time in Senegal. It is to be noted that the question pertaining to the knowledge of the effects of climate change, which was asked to the participants of each focus group meetings, did not elicit many responses. The responses received were focused on greenhouse gas emissions as a contributor to global warming and coastal erosion, which is further compounded by sand extraction.

7.1.2. Impact of the infrastructures constructed on the vulnerability of communities to coastal erosion

Rufisque: Prior to the construction of the dike in Rufisque, floods occurred on an annual basis. Since its completion in 2012, no flood events have been recorded. According to several stakeholders that were consulted, there would have been considerable damage to the area of Thiawène and the cemetery¹³ as a result of the centenary swell along the Senegalese coastline in 2014, if the dike had not been constructed.

Saly: Replenishment of the beach has been observed behind the first seawall. Executing agencies have observed a considerable decrease in the force of the waves that reached the coastline during the centenary swell of May 2014. This has been attributed to the presence of seawalls. In addition, the fish processing women indicated that they feel safer on the fish processing dock since the rehabilitation of its foundations and the artificial beach replenishment.

Joal-Fadiouth: Based on the outcome of the focus groups and the field observations made, it is noted that the rehabilitation of the supporting pillars, construction of a gabion dike and the artificial beach replenishment effectively protect the dock from coastal erosion. Prior to the construction of the coastal protection infrastructures, the sea reached the fishing dock while currently it is separated by several metres of sand.

7.1.3. Impacts of the coastal protection infrastructures on economic activities

Saly: The fish processing women operating in Saly can now process one tonne of fish in three days instead of one week. This increase in production has occurred despite the washing basins not being used and the solar lightning not functioning. Based on field observations, a decrease in time required to process fish is likely due to the provision of potable water at the fishing dock. As no economic studies were conducted to measure the effects of the rehabilitation of the fishing dock on the income of the fishery sector, the evaluator was not able to collect quantitative data on the above during the mission. Therefore, the following question pertaining to the impact on

¹³ According to the beneficiaries, the centenary swell would have destroyed Thiawène and the cemetery had the dike not been there.



income levels was asked at the focus group meeting to which positive responses were received: "How have the interventions implemented by this project improved your quality of life (e.g. increased household revenue or improved sanitary conditions)?".

Joal-Fadiouth: The rehabilitation of the fishing dock in Joal-Fadiouth has allowed an existing agreement with the EU to be maintained. According to the representatives of the fishermen community who attended the focus group meetings, the EU undertakes an assessment every two years. Since the fishing dock did not meet their requirements, the community would have lost their agreement with the EU if the dock had not been rehabilitated by the AF-financed project. Without the aforementioned agreement, they would not have been able to export fish to Europe which is one of Senegal's main market. This would have resulted in significant economic losses within the port.

The anti-salt dike is expected to recover 1,500 hectares of land, which will be used for rice cultivation. The trials undertaken during the first year – i.e. from August to September 2013 – on two hectares of land yielded six bags of rice at 50 kg each. In 2014, the trial was extended to six hectares and although the rice had initially grown considerably, low levels of rainfall resulted in the crops drying up. The crops subsequently failed due to the prevailing drought. However, the anticipated rainfall regime for 2015 is considered to be adequate for rice cultivation. In addition, input from a technician of the Senegalese Institute of Agricultural Research (ISRA) will be provided to the local communities to ensure that the appropriate variety of crops is selected and planted timeously. As the salt content of the soil is expected to decrease over time because of constant leaching, the rice-growing communities anticipate a yield of six tonnes per hectare. However, during the early years of production, a low yield is expected as rice for domestic consumption and local trade is likely to be limited. The maximum yield is anticipated after five years, which corresponds with the start of rice exports in 2017.

Based on the tests undertaken with the fish smoking kilns in Khelcom, the following financial benefits are expected: i) the cooking time will be reduced from one hour to 15-20 minutes; and ii) the amount of fuel required for the processing of fish will be reduced by five times. The increase in the quality of fish products – as a result of improved hygienic conditions within the fish processing area – warrants a quality label. This is based on the results obtained from the prototype as the fish smoking kilns have not yet been used. The fish smoking kilns, as well as other infrastructure financed by the AF in Khelcom, are expected to decrease the level of ambient air pollution and unhygienic working conditions. Significant health benefits are therefore anticipated from the use of the fish smoking kilns provided by the AF.

The causes identified for the fish smoking kilns not being used – despite having been available for the last two years – differ from one stakeholder to the other. Several individuals have stated that the delays are because the Mayor has not yet handed over the fish smoking kilns to the local communities. It has also been suggested that there is potential for conflict within the local fish processing community as the beneficiaries of the fish smoking kilns were not identified prior to their construction. However, Dynamique Femme provided a list of 60 potential women beneficiaries to the evaluator. Another potential reason is that the fish smoking kilns do not meet the needs of the community due to their low capacity, despite the consultation sessions held with them during the design phase of the project and the tests undertaken with the prototype. However, fish smoking kilns are being utilised elsewhere – for example, a project implemented by Enda Energy and Wetland International in three sites including two areas of Joal-Fadiouth during the period 2014-2015. These improved fish smoking kilns are six meters long and require two times less wood than traditional ovens. They were widely used after a verbal handover by the mayor. It is presumed that the fish smoking kilns financed by the AF project are not in use as the fish processing women would have to adapt their current working methods to use low-capacity kilns.



One of the methods for making the fish smoking kilns financed by the AF project viable to the local community is to capitalise on the improved hygiene and quality through a labelling process. This process would allow the price of smoked fish from the fish smoking kilns financed by the AF to be higher than that from traditional kilns. The subsequent increase in price would therefore offset the decrease in quantity of smoked fish produced. However, such a process is time-consuming. In addition, despite the financial benefits of the fish smoking kilns, their use is considered to be financially risky because they operate at a lower capacity in comparison to traditional kilns. Consequently, users' income could be negatively affected.

7.2. Impacts observed on the biodiversity

According to beneficiaries in Joal-Fadiouth, the anti-salt dike has supported birdlife, resulting in an increase in bird diversity¹⁴. A total of 1,435 birds of 16 different species was recorded in August 2014, and 19 different bird species comprising 1,060 birds were documented in October 2014. The population of shorebirds, herons and pelicans has increased considerably since the construction of the dike. In addition, the beneficiaries have noted that there has been natural regrowth of some grass species and predict that small game will soon return to the site. Similarly, the seawalls provide a breeding ground for several seabird species such as pelicans and cormorants that were previously rarely observed in the area.

In addition to the benefits for bird species as noted above, the population of fish and shellfish has also been positively affected by the activities financed by the AF, as the basalt rocks comprising the dike provide a breeding ground. This population increase allows fishermen to use fixed nets close to the dike. A fisherman consulted during a site visit to Rufisque stated that the size and population of fish caught in proximity to the dike has increased. Similar observations have been made in Saly regarding the seawalls financed by the AF project, which are likely to be beneficial to the fish species.

8.

Sustainability

8.1. Ownership of the project at the local and national scales

Local communities in Rufisque and Joal-Fadiouth have ownership of the interventions financed by the AF. The stakeholders consulted refer to the AF-financed project as theirs and they work in close collaboration to develop maintenance strategies that will sustain the benefits derived from the interventions implemented.

Conversely, in Saly the beneficiaries' opinions differ slightly. The fish processing women are largely satisfied with the interventions financed by the AF, despite the fact that the washing basins and solar lighting are not operational. However, the hotel group and some of the villagers located close to the fish processing area are not satisfied with the intervention of the AF-financed project. According to the hotel group, this is because the seawalls do not cover the 1.5 km stretch of coastline as initially planned and therefore do not adequately protect their hotel structures from coastal erosion. Furthermore, the villagers are not satisfied with the AF-financed project as the construction of the seawall should have started from the side of the village which would have prioritised their protection, but instead started on the hotels side. However, according to Mr. Mohamadou Ly, the civil engineer responsible for the technical evaluation of the interventions financed by the AF, the seawall could not be constructed from the village side due to the orientation of the swell. In addition, limited ownership of the AF-financed project by the villagers in

¹⁴ Ba, N. S. 2015. Joal-Fadiouth: Fonds d'adaptation aux changements climatiques; les premières retombées avec les ouvrages réalisés. Sud Quotidien, 6606. Mardi 12 Mai, 2015.



Saly is a result of their involvement in the process occurring at a late stage. Consequently, they have not participated in decision-making processes on the implementation of activities nor have they followed the progress of the project interventions.

8.2. Strengthened capacity

The knowledge and technical capacity of the CSE and the executing agencies on coastal erosion has increased considerably through the implementation of the AF-financed project. Prior to this project, the executing agencies – i.e. DEEC, Green Senegal and Dynamique Femme – had no experience with the construction of coastal protection infrastructures, such as seawalls and dikes. However, through their involvement in the design of the coastal protection structures, they have acquired an extensive knowledge of adaptation to coastal erosion.

8.3. Maintenance of the AF-financed infrastructures and activities

Neighbourhood committees, a management committee and a national network, namely the Littoral Actors Network (REAL) were created in each intervention site to sustain the benefits derived from the AF-financed project.

- *Neighbourhood Committees:* The neighbourhood committees are divided into two sub-committees: i) the sanitation sub-committee; and ii) the environment sub-committee. These committees are tasked with monitoring, discussing and managing different behaviours concerning the environment. The members of the committees are made up exclusively of community members and are officially recognised by the AF-financed project. Each committee comprises approximately 10 members.
- *REAL:* The REAL was established at the request of the beneficiaries' representatives as they wanted to maintain open communication between the various stakeholders after the closure of the AF-financed project. Their role includes participating in proceedings relating to the environment at the national level. All beneficiary groups apart from the hotels – who did not wish to be included – are involved in the network in Saly. The network currently operates on a voluntary basis. Funding requests have been made to the EU, but currently none have been secured. The network has a limited support mechanism to promote its sustainability. It is noted that the network has been extended beyond the intervention sites. For example, St Louis is now included in the network.
- *Management, maintenance and training committees:* The role of these committees is to identify and ensure ongoing repair of minor damages to the coastal protection structures funded by the AF project, thereby preventing significant damages. The management committees are made up of municipalities, technicians and representatives from the local communities. The decree to institutionalise the management committees is currently in the process of being accepted.

An official handover document was signed by the executing agencies in each intervention site to promote local community involvement in the maintenance of coastal protection infrastructure funded by the AF. The aforementioned document contains a clause stipulating that annual funds need to be allocated by the municipality to maintain the coastal protection infrastructure financed by the AF project. The municipal officials in Rufisque and Saly have provided oral confirmation that financial resources will be provided for the maintenance of the infrastructures.

Some of the activities undertaken by the municipalities in the intervention sites include the supervision of the weekly clean-up of beaches in Joal-Fadiouth and the daily clean-up of the esplanade in Rufisque, which has required employing a full-time staff member. The CSE has compiled a newsletter detailing the activities undertaken in the AF-financed project, which will be disseminated to the relevant ministries overseeing the management of the



environment, development, agriculture and fisheries sectors. This will encourage financial contributions from governmental institutions at the national level for the maintenance of the coastal protection infrastructure financed by the AF project.

8.4. Complementing the activities of the AF-financed project with co-financing

Several ongoing or planned projects aim to complement the activities implemented by the AF project. A complementary project has been identified in each intervention site as described below:

- *Projet d'aménagement de l'esplanade à Rufisque*: The DEEC has compiled and submitted a proposal to the Société Ouest Africaine des Ciments (SOCOCIM) to develop the esplanade for the dike constructed in Thiawène by the AF-financed project. As there are different opinions on the use of the esplanade, proposals are being analysed to determine the most effective method of addressing the users' needs. The DEEC's proposal contains the following elements: i) pockets of vegetation; ii) waste collection points; iii) a solar lighting system; iv) the construction of a football field; and v) the display of information panels on several themes pertaining to the dike. The total cost estimated for the implementation of these activities is approximately US\$ 750,000.
- *World Bank project in Saly*: This project started in December 2014 with a total budget of US\$ 36,000,000. It is being implemented by the Ministry of Tourism, which has appointed APIX (Promotion des Investissements et Grands Travaux) as the construction manager. It is a five-year project focused primarily on the area managed by the "Société d'Aménagement et de Promotion des Côte et Zone Touristiques du Sénégal" (SAPCO) in Saly – i.e. the three kilometre area between the Hotel Espadon and the fishing village. Technical studies such as the bathymetric studies produced by the AF-financed project will be used by the World Bank project. Feasibility studies are being undertaken by Egis, a French engineering company. The planned submerged and non-submerged seawalls and potential beach replenishment activities will complement the interventions implemented by the AF-financed project. In addition, the lessons learned in the project including *inter alia* the cost of seawall construction and the importance of integrating socio-economic factors in the implementation phase will be taken into account in the feasibility study to avoid potential conflicts with the beneficiaries.
- *Project of the Fond Français pour l'Environnement Mondial (FFEM) in Joal-Fadiouth*: This project started in 2014 and has a budget of US\$50,000. It aims to support the development of rice cultivation in Joal-Fadiouth. The funds allocated to this project will be used to obtain quality seeds and agricultural equipment. Dynamique Femme is working in close collaboration with the FFEM to implement these activities.

8.5. Sharing of knowledge gained through the implementation of the AF-financed project

Experts from Benin visited Senegal in April 2013 to observe the achievements of the project and discuss its implementation with the Senegalese project team. The aim of the visit was to use the lessons learned in the AF-financed project for the development of a project against coastal erosion in Mali.

The CSE is currently developing a brochure entitled "Récits d'adaptation" in French and English. This document contains testimonies collected in Saly, Rufisque and Joal-Fadiouth on the project interventions. A set of guidelines entitled "Adaptation to coastal erosion: some lessons learned" will be produced in French and English. The objective of this exercise is to document the major lessons learned from the project in terms of innovations, successes, challenges encountered and solutions implemented. This document will be shared at the national level and with international partners such as the AF.



The CSE and Green Senegal are currently working on a handbook entitled "Des pratiques en partages". This manual focuses on lessons learned on reducing coastal erosion during the implementation of the AF-financed project, as well as other protection measures implemented against coastal erosion in Senegal. The handbook will be completed by the end of 2015, as it will be presented at the Conference of Parties (COP) 21 which will enable the sharing of lessons learned on an international scale.

Summary table of the evaluation¹⁵

Criterion	Summary of the evaluator's observations	Score of the evaluator
9. Achievement of the project objectives and results (overall scoring)		(VS, S, MS, SU, U, VU)
Sub-criteria (below)		MS
Relevance	<p>The project is aligned with the AF's strategic objectives and priorities. Firstly, the project has covered some of the adaptation costs relating to sea level rise in Senegal. Secondly, the AF has financed coastal protection infrastructure such as dikes, seawalls and protection walls – which have been selected and implemented after consultation with stakeholders. Thirdly, thorough awareness-raising campaigns and training provided by project, national and local institutions have increased capacity to adapt to climate change, implement the appropriate approaches to adaptation and the maintenance of the coastal protection infrastructures.</p> <p>The AF-financed project has addressed several priorities identified in the NAPA, which details Senegal's priority needs for adaptation to climate change. Of the 12 NAPA priorities, the AF-financed project has contributed to the following: i) protection of the coastal region through the implementation of technical infrastructure; ii) protection of the coastal area through the implementation of institutional measures; and iii) awareness and education.</p>	S
Effectiveness	<p>The five strategic objectives (SO) of the project have been achieved to different degrees. A rating has been provide for each SO:</p> <ul style="list-style-type: none"> - SO1 "Implement the actions to protect the coastal areas of Rufisque, Saly, and Joal-Fadiouth 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" – S; - SO2 "Implement the actions to fight the salinisation of agricultural lands used to grow rice in Joal-Fadiouth, with the construction of anti-salt dikes" – S; - SO3 " Assist local communities of the coastal area of Joal-Fadiouth, 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" – MI¹⁶; 	MS

¹⁵ Please see Annex 1 for a description of the scoring system.

¹⁶ The rating MI was assigned to SO3, which refers to assisting fish processing women in Joal-Fadiouth. However, as the infrastructure in Khelcom is not operational, the AF-financed project does not currently benefit these women directly.



	<p>- 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" – S; and</p> <p>- SO5 "Develop and implement the appropriate regulations for the management of coastal areas" – MS.</p>	
Efficiency	<p>Changes in the design of activities – in accordance with the resources available – were made by the project team when activities did not fulfil the needs of local communities.</p> <p>The concept of the AF-financed project is based on priorities that were identified to promote community safety in Senegal's coastal areas. The project idea was formulated by the DEEC in 2008, following climatic events in 2007 that negatively affected communities and infrastructure in Saly and Rufisque.</p> <p>All stakeholders responded positively to the direct transfer of funds to a national institution, namely the CSE. This system of funds transfer has allowed stakeholders to follow a contracting process, which is simpler than the one used by the government. This system has decreased delays in the implementation of activities because of reduced administrative processes. It was noted during consultations with relevant stakeholders that the system of quarterly fund requests implemented in the majority of projects in Senegal is time-consuming and the delays in fund transfer regularly delay the implementation of activities.</p> <p>It was emphasised that the funds allocated to project management in the initial budget were not sufficient. This is largely attributed to: i) the extension of the project lifespan; and ii) the fact that a detailed budget was not developed in the Project Document. A detailed budget with individual budget lines for the salary of each member of the management team, as well as travel and equipment costs, would have enabled appropriate estimates of the financial needs for the management of the AF-financed project. It is important to ensure that adequate funding is allocated to managing the project and included in a detailed budget in the Project Document. In this case, a lump sum was allocated to each activity without detailed individual budget lines.</p>	S
Sustainability of project results (overall scoring)	Based on the criteria below, the overall long-term sustainability of the activities financed by the AF project is rated as Moderately Probable (MP).	<i>(P, MP, MI, I)</i>
Sub-criteria (below)		<i>MP</i>
Financial	The agreements – verbal or written – provided by the respective municipalities will support the ongoing maintenance and minor repairs to the coastal protection infrastructure financed by the AF project. Major repairs to the infrastructure – such as those required to the dike in Rufisque, as well as the seawalls and the retaining wall of the fishing dock in Saly – will not be covered by the funds contributed by local communities. In addition, there is no system in place to determine the source of funding to address damages resulting from climate-related hazards. However, it should be highlighted that local communities have taken ownership of the interventions financed by the AF project and have proposed a financing system whereby some of the repair costs are covered by the respective communities. They also intend to solicit funds from government institutions for repairs that are beyond their budgets.	MP



Socio-political	<p>Apart from the hotel group in Saly, all stakeholders consulted within the national and local government institutions had positive views of the AF-financed project and recognised the current or potential benefits of the project interventions.</p> <p>The local communities and authorities as well as national institutions have taken ownership of the AF-financed interventions. The stakeholders intend to maintain the coastal protection infrastructure so that they benefit the local communities in a sustainable manner.</p> <p>Coastal erosion has negatively affected the beneficiary communities for over a decade. Therefore, the direct benefits of the coastal protection infrastructure – such as that financed by the AF – on local communities is apparent. Based on the outcome of the focus group meetings and consultations, it is concluded that local communities and authorities, as well as national institutions, acknowledge the benefits of the coastal protection infrastructure. In addition, several behavioural changes have been observed as a result of extensive awareness-raising campaigns.</p> <p>A socio-economic study was undertaken to analyse a land allocation system in Joal-Fadiouth and the potential beneficiary lists provided by Dynamique Femme¹⁷. Despite the study, a potential lack of clarity in the selection of beneficiaries of the released lands for rice cultivation and fish smoking kilns in Khelcom was highlighted during consultations held by the evaluator. This could be a potential source of conflict. As the evaluator did not manage to substantiate this claim, it is suggested that Dynamique Femme ensures transparency in the selection process – for which a list of potential beneficiaries already exists for each intervention site – and that there is general consensus on the beneficiaries selected.</p>	P
Institutional framework and governance	<p>The existing laws, political system, governance structures and regulatory processes do not currently present a risk to the sustainability of the interventions financed by the AF. These interventions are in line with the existing environmental legislation. Furthermore, the legal tools created as a result of this project – i.e. the revision of the environmental law and the creation of the littoral law – will be implemented in the near future and will facilitate the maintenance of the coastal protection infrastructure financed by AF.</p> <p>Seven manuals detailing the maintenance of coastal protection infrastructure financed by the AF were compiled and distributed to local authorities and district committees. A management committee, consisting of clearly identified members, will be responsible for implementing the guidelines outlined in the manuals to ensure ongoing maintenance of the infrastructures implemented. During consultations, the clarity of these guidelines was highlighted several times by beneficiaries.</p>	P
Ecological	<p>Environmental and Social Impact Studies were undertaken in each intervention site. These studies conducted limited environmental impact assessments, and primarily focused on social impacts. For example, the assessment undertaken for Rufisque did not consider the impacts of the dike</p>	MP

¹⁷ Dynamique Femme, 2012. Enquête socio-foncière pour la valorisation des terres récupérées. Joal, Senegal.



	<p>on local animal and plant species. The environmental impacts considered in the study are limited to air, water and soil pollution¹⁸. A similar study undertaken for the seawalls in Saly did not analyse the impacts of the AF-financed infrastructure on the marine fauna and flora¹⁹.</p> <p>Given the present context of rising sea levels and coastal erosion, mangrove ecosystems provide primary coastal protection²⁰ – which is the aim of the AF-financed project. One of the studies considered animal and plant species and briefly discussed the potential effects on the mangrove ecosystem²¹. The study recommended that to avoid negative impacts on the mangrove ecosystem a maintenance committee is set up to regulate water flow. This recommendation is inappropriate for preventing the degradation of mangroves. Rather, the study should have emphasised the potential environmental impacts and proposed the monitoring of the health of the mangrove ecosystem prior to, during and following the implementation of interventions.</p> <p>There are positive environmental impacts that have been observed as a result of the dikes constructed in Rufisque and Joal-Fadiouth, and seawalls in Saly. For example, positive impacts have been recorded on: i) the aquatic fauna in Rufisque and Saly; ii) the bird population in all intervention sites; and iii) vegetation in Joal-Fadiouth.</p>	
Climate uncertainties	Extreme weather/climatic events such as centenary swell were taken into account in the design of all interventions implemented in the AF-financed project. However, coastal erosion occurs as a result of highly unpredictable factors such as sea level rise and storm surges.	MP
Implementation of activities		
Monitoring & Evaluation (overall scoring)	For this section, it is important to note that the AF-financed project was initially planned for two years. Consequently, a baseline study and Mid-Term Evaluation were not compulsory in the implementation process. However, a Mid-Term Evaluation was undertaken ²² .	(VS, S, MS, SU, U, VU)
Sub-criteria(below)	The monitoring and evaluation plan defined in the Project Document has been applied throughout the implementation of the project. However, no regular monitoring by means of quantitative targets and SMART indicators was undertaken throughout the project.	MS
Monitoring and evaluation (M&E) mechanism	There was no mechanism for the monitoring and evaluation of the impacts of the project interventions on the beneficiary communities in a rigorous and quantitative manner. Green Senegal and Dynamique Femme carried out	MI

¹⁸ Synergie Environnement, 2012. Environment Impact Assessment for the coastal protection works in Thiawlene.

¹⁹ Coulibaly, G. 2013. Etude d'Impact Environnemental et Social pour la réalisation d'ouvrage de protection côtière du littoral de Saly. Dakar, Sénégal.

²⁰ UNEP. 2006. UNEP regional seas reports and studies No. 179: Pacific island mangroves in a changing climate and rising sea.

²¹ The section that corresponds to the mangrove ecosystem in the Environmental and Impact Assessment Study for the dike in Joal-Fadiouth is as follows: "There is the possibility of mangrove regeneration within areas that have been degraded by excessive salinity. However, poor management of the anti-salt dike could negatively impact on the mangrove." See: HPR Ankh Consultants, 2013. Etude d'Impact Environnemental et social du projet de réhabilitation d'une digue anti-sel à Joal. Joal, Sénégal.

²² Wade, P. M. & Fall, T. 2012. Rapport d'Evaluation à Mi-Parcours du Programme d'Adaptation à l'Erosion Côtière dans les Zones Vulnérables.



	<p>qualitative studies on the baseline situation but they were not structured and therefore could not form the basis of a monitoring and evaluation system.</p>	
Implementation of the M&E (used for adaptive management)	<p>The national steering committee meets biannually, and is chaired by the National Committee on Climate Change (COMNACC) and the technical and scientific committee. The local steering committees supervising the implementation of the AF-financed interventions met 1–3 times per semester throughout the duration of the project. The financial reports were sent to the AF every semester. The primary construction company – i.e. DEEC or Dynamique Femme – and the construction managing company in Saly were inspected weekly during the construction of coastal protection infrastructures financed by the AF.</p> <p>Annual audits were not undertaken by an external agency, as it is not required by the AF for a two-year project. The CSE is currently in the process of gathering and verifying all the documentation provided by the executing agencies supporting expenditure. These documents will be provided to an independent auditing company who will undertake a final audit within the coming two months.</p>	S
Budgeting and funding the M&E activities	<p>According to the CSE, the budget outlined in the M&E table in the Project Document was met. This is corroborated by the comparative analysis of the budget initially allocated and the funds used – see Section 5.5. Documents containing detailed expenditure were, however, not available for the evaluator’s inspection.</p>	S
Selecting indicators	<p>The logframe included in the Project Document lacks details on indicators, end of project targets and verification methods. Furthermore, the indicators provided in the logframe do not match the SMART criteria. These indicators should have been Specific, Measurable, Achievable – although no quantifiable targets were provided for the AF-financed project – Relevant and Time-bound.</p> <p>There has been no regular monitoring and evaluation of the progress made in implementing the AF-financed project, except for verifying indicators with the beneficiaries within three months of the project initiation and the Mid-Term Evaluation. Consequently, there has been no regular review of the indicators defined in the Project Document. This gap in monitoring and evaluation occurred because no system was outlined in the Project Document, and not as a result of the negligent implementation of the AF-financed project.</p> <p>In October 2013, indicators were provided by Enda Energy – which is part of the NGO German Watch Network – for monitoring the AF-financed project. However, these did not address the gaps in monitoring and evaluation as no monitoring of these indicators was implemented on the ground.</p>	I
Consistency of the M&E system within the framework of M&E projects/programs at national level	<p>Although a component relating to the M&E was included in the Project Document, these activities were not detailed. In addition, the M&E system proposed in the logframe to monitor the impacts of the AF-financed interventions was not rigorous.</p> <p>According to the national stakeholders consulted, there is no national, local or sectoral M&E program. At the sectoral level, the Ministry of the Environment and Sustainable Development (MEDD) developed a planning manual on M&E in 2014, which coincided with the end of the implementation</p>	N/A



	<p>period of the AF-financed project²³. This manual covers compliance with M&E procedures, its implementation and results of the project. Furthermore, the manual highlights the need for: i) an assessment of the baseline situation before initiating any project activities; ii) producing proper documentation throughout the project; and iii) collecting information on the main indicators on a regular basis – beyond the implementation period of the project – to monitor the impacts in the medium- to long-term. However, it appears that this system has not yet been implemented.</p> <p>The document entitled “Plan Senegal Emergent 2014-2018” contains economic and social indicators, but none pertaining to climate change or development of the coastal zone, which would have applied to the AF-financed project. However, the M&E system for these indicators is not detailed in the aforementioned document.</p> <p>Currently, there is no M&E system for the long-term impacts of the interventions financed by the AF beyond the project implementation period. The establishment of such a system has been recommended by the evaluator.</p> <p>A manual outlining the successes, failures and lessons learned in the implementation of the AF-financed project will be presented to COP at the end of the year. This will facilitate the dissemination of lessons learned to the international community of experts on adaptation to climate change. Documenting the impacts of the project will promote the integration of lessons learned into future national and international projects.</p>	
Catalytic role	<p>The technical knowledge of the stakeholders – including the executing agencies and the construction managers, and particularly the CSE – on reducing coastal erosion has increased through the implementation of the AF-financed project. The involvement of three non-governmental institutions in the implementation of the project has reduced the risk of loss of institutional knowledge due to staff turnover.</p> <p>The experience acquired in the AF-financed project will inform ongoing projects, such as those undertaken by the World Bank and FFEM in Saly and Joal-Fadiouth respectively. These projects aim to provide complementary activities to those financed by the AF. Calls for additional financial resources have been made for complementary activities, such as the development of the esplanade in Rufisque.</p>	<p>(VS, S, MS, SU, U, VU)</p> <p>S</p>
Relevance in relation to national priorities for development and climate change adaptation	<p>Coastal erosion is one of the priorities identified in the NAPA, second National Communication Strategy and environmental sectoral strategy. The intervention sites selected for the project include coastal areas, which have been identified by the West African Coastal Master Plan – developed in 2010 – for coastal protection measures. Additionally, coastal erosion is identified as the most significant impact associated with climate change on Senegal’s population and economy. This is detailed in Axis 2 which is "human capital, social protection and sustainable development" of the document entitled “Plan Senegal Emergent 2014-2018” – which guides national development in the country. The national objectives relating to the different elements of Axis</p>	<p>(VS, S, MS, SU, U, VU)</p> <p>S</p>

²³ Djigo, S. A. 2014. Manuel de Planification et de Suivi-Evaluation. BECI – CONSULT. République du Sénégal, MEDD, Direction de la Planification et de la Veille Environnementale. Dakar, Sénégal. May, 2014.



	2 are: i) prevention and risk reduction; and ii) improvement of disaster management. The AF-financed project has contributed to risk reduction.	
Involvement of stakeholders	There has been extensive involvement of communities in the decision-making processes of the AF-financed project. Stakeholders contributed to the formulation and implementation of activities. Furthermore, it was noted that the beneficiary communities in each intervention site had an extensive knowledge of the AF-financed project. Great levels of community participation were recorded in the focus group meetings. The representatives and members of the local communities referred to the coastal protection infrastructures financed by the AF as their own. And they have also started a process to develop a long-term maintenance system for the coastal protection infrastructure. For example, in Rufisque a system whereby the beneficiaries contribute financially to the maintenance of the infrastructures has been proposed.	(VS, S, MS, SU, U, VU) TS
Financial planning	A plan detailing all project-related expenditure was included in the MoU signed by the AF and the CSE. The expenditure plan became obsolete as it was spread over the course of two years while the implementation of the project extended to four years. However, stakeholders highlighted that no delays occurred in the implementation of activities as a result of delayed funds transfer. In addition, the executing agencies were positive about: i) the direct transfer of funds to the CSE system for the implementation of activities; ii) the transfer of funds by the CSE to the executing agencies throughout the project; and iii) the implementation of communication activities and funds transfer to construction companies by the CSE. The system was described as transparent, appropriate and effective by stakeholders during consultations.	(VS, S, MS, SU, U, VU) S
Supervision by the CSE	The executing agencies emphasised the CSE's effectiveness in the implementation of the AF-financed project. Although the role of the CSE was initially limited to the supervision of the project and not its implementation, the institution has been intensively involved on the ground, especially in the challenges encountered in Saly.	(VS, S, MS, SU, U, VU) TS
Overall scoring	It is important to note that the project was a pioneer on many levels in Senegal: - first project whereby direct financing is adopted; - first AF-financed project; and - first project of this magnitude to be implemented by the CSE.	(VS, S, MS, SU, U, VU) S

The project received the prize entitled "momentum for change" in 2011 at COP in Doha (Qatar) which was organised by the UNFCCC.



Lessons learned, recommendations and conclusion

10.1. Lessons learned

- 10. • The collaboration between government institutions, such as the DEEC and non-governmental institutions, such as the CSE, Green Senegal and Dynamique Femme provided effective support and allowed the project to be implemented without significant delays. Because non-governmental institutions are less affected by political changes than government institutions, their involvement reduced the vulnerability of the project to delays such as ministerial reshuffles or changes in government strategy.
- The three agencies that undertook the Environmental and Social Impact Assessments focused largely on social aspects, which resulted in gaps in the environmental impact analysis. It is, however, necessary that the potential ecological impacts are identified and adequately assessed.
- It is important to note that funding was not allocated for planting vegetation intended to strengthen the hard infrastructures financed by the AF. Dynamique Femme's planting initiative to complement the dike in Joal-Fadiouth – which is funded by another project – covered a small section of the dike. Plant species such as *Cactaceae*, *Casuarina equisetifolia*, *Chrysopogon vetiver zizanioides* and *Andropogon gayanus* would have benefitted the dike constructed in Joal-Fadiouth. In addition to strengthening the dike, these plant species would have increased its visibility, limited degradation as a result of vehicular access, increased forage production and improved the aesthetic value of the infrastructures.
- An M&E system with rigorous and quantitative indicators and targets should have been applied from the beginning of the project to effectively demonstrate the impacts of the funds allocated by the donor agency at the mid-term and end of the project, respectively.
- It needs to be ensured that supply companies are responsible for training the relevant people in maintaining the equipment installed and/or purchased. The reason being that the lack of knowledge on the maintenance of the solar lighting installed in Saly has resulted in the system malfunctioning.
- The technical challenges encountered in the design and construction of the seawalls in Saly could have potentially been avoided if international expertise was procured. The limited expertise in coastal protection infrastructures at the national and regional levels could have been ably supported by the skills that have been developed in this particular field within the international community. The international expertise would have helped to avoid the current scenario – where the seawalls in Saly were partially realised – and helped to transfer knowledge to national institutions for future projects.

10.2. Recommendations

Recommendations for the sustainability of the benefits derived from the project interventions

- During consultations, the evaluator received conflicting information regarding the selection of beneficiaries in Joal-Fadiouth for rice cultivation on the land parcels released and the use of the fish processing area in Khelcom. Therefore, it is recommended that the implementation team ensures that the selection criteria are clearly defined and communicated to relevant officials and local community members. Additionally, the implementation team need to ensure that the selection of beneficiaries is supported by the majority of stakeholders. In particular, it must be ensured that the use of the fish processing area rehabilitated by the AF project in Khelcom will not be a source of conflict within the community. According to the evaluator, there is currently a risk that the rehabilitated fish processing area will not be used in the near future and will therefore degrade to the extent that it is no longer functional.
- Once a strategy for selecting beneficiaries has been developed and approved by the relevant local community, it is suggested that the implementation team undertakes a detailed economic analysis of the fish smoking kilns financed by the AF. This study should include a detailed comparative analysis of the



aforementioned kilns with traditional kilns, particularly focusing on fuel consumption and the time and effort required to produce equivalent quantities of smoked fish. This study should provide information on how AF-funded kilns can be used to secure the same level of income for local communities as traditional kilns do. For example, income could be optimised by the implementation of a labelling system for the fish products. This economic study should include current and targeted income levels of the selected beneficiaries. A strategy to guide beneficiary selection ought to be implemented as soon as possible.

- Monitoring the status of the riverine mangroves adjacent to the anti-salt dike should be undertaken. Considering the importance of the mangrove ecosystem in terms of coastal protection and biodiversity – both of which are major contributors to Senegal's economy – any signs of degradation should lead the development and implementation of a protection, clean-up and/or restoration plan.
- Financial sustainability has not yet been achieved despite the financing agreements signed with local authorities and verbal or signed agreements regarding the maintenance of the infrastructures implemented. For example, an annual grant will be allocated to the maintenance of coastal protection interventions financed by the AF in Joal-Fadiouth. A workshop should be held with the relevant stakeholders at the national and local level to identify funding opportunities to support repair efforts in the case of extreme weather events or other major causes of degradation. Depending on the magnitude of the reparation works required, stakeholders should have clearly defined roles and responsibilities. For example, local communities could be responsible for the ongoing maintenance; local authorities – i.e. municipalities – could finance and oversee minor repairs while the national government institutions could undertake significant repairs. A financial support system whereby the beneficiary community in each intervention site contributes financially to the ongoing small-scale maintenance of the infrastructures implemented – as proposed by the beneficiaries in Rufisque – should be established.
- Quantitative data should be collected as far as possible despite the completion of the AF-financed project. This would require specific indicators and measurement protocols to be developed. Quantitative information pertaining to the benefits of the interventions financed by the AF project will strengthen the argument for funding requests. For example, an economic study should be undertaken to determine the increase in income experienced by the beneficiaries of the rehabilitated rice-growing areas. Such data could be used to attract funds from donor agencies for the extension of the anti-salt dike in Joal-Fadiouth. This would meet the needs of the local community who have requested on several occasions that the dike be extended.

Recommendations for future projects

M&E system defined in the Project Document

- Baseline studies must be undertaken at the outset of each project – before initiating any activities – and must include SMART criteria to provide detailed and quantitative data on the baseline situation of the selected beneficiaries. Each project must adopt a thorough M&E system throughout the implementation period.
- A thorough M&E system must consist of baseline studies, Mid-Term as well as Final Evaluations to be implemented during the project's lifespan. The M&E system must be clearly defined in the Project Document.
- A long-term monitoring system of the benefits needs to be implemented beyond the project's lifespan to determine the impact on the vulnerability of beneficiary communities to climate change. This would contribute towards identifying the best adaptation practices and their long-term sustainability.

Roles of the stakeholders involved in the implementation of project defined in the Project Document

- It is beneficial for the implementation of a project to be undertaken by national executing agencies including government as well as non-government institutions.
- The financial mechanism to fund the medium- and long-term maintenance of infrastructures needs to be clearly defined in the Project Document. If government departments had been involved to a larger extent in



the implementation of the AF-financed project, the management of the coastal protection infrastructures might have been included in the annual budget of the fisheries, agriculture and the environment ministries.

- Capitalising on the knowledge acquired during the implementation of projects would be promoted by the involvement of national and local ministries. These governmental institutions are generally involved in the formulation and implementation of several projects which can be informed by lessons learned from ongoing or past initiatives. Therefore, the role and responsibility of the local and national authorities in the implementation of projects needs to be clearly defined in the respective Project Documents.

Project activities as stated in the Project Document

- The component pertaining to education in the AF-financed project is limited. Projects to be developed in the future should include activities relating to the education of future generations. These activities may include the compilation of teaching guides or changes to the school curriculum to integrate environmental aspects as well as climate change and adaptation. Targeting the younger generation is seen as an effective way to impact on a large proportion of the population through knowledge transfer to the family, which in turn is expected to induce behavioural changes towards the environment.
- The benefits of combining soft and hard interventions in terms of maximising the efficiency and sustainability of adaptation projects is increasingly being recognised by the international community. No natural infrastructure was included in the AF-financed project. However, Dynamique Femme managed to secure alternative sources of funding to implement a dune-stabilisation planting initiative in Joal-Fadiouth. The strengthening of hard infrastructures – i.e. dikes and embankments – with soft interventions ensures their sustainability at low costs²⁴. Selecting appropriate plant species to complement hard infrastructures, these can result in several environmental and socio-economic benefits such as the production of Non Timber Forest Products – which can be used for local consumption or commercialised.

During the project inception phase:

- To avoid any potential conflict, it is vital to ensure that a transparent selection process with specific criteria is applied when beneficiaries are selected. The selection criteria could be developed in a participatory manner with the input of local communities.
- All Environmental and Social Impact Assessments undertaken must include a thorough analysis of the potential impacts of the proposed infrastructures on natural resources including animal, plant and fragile ecosystems. These studies should be in alignment with the “Plan Emergent Senegal 2014-2018”, which recognises the loss of natural resources – including biodiversity – as a major threat to sustainable development in Senegal. Moreover, it is suggested that two separate studies for social and environmental impacts are undertaken to provide information for future projects. However, an amendment to the Environmental Code would be required as it stipulates that an Environmental and Social Impact Assessment needs to be undertaken.

During the implementation of project activities:

- Based on the lessons learned in the AF-financed project, training beneficiaries on the maintenance of the equipment provided/installed should be included in suppliers’ contracts.
- Budgets should be amended for the recruitment of international experts, where there is a lack of technical expertise at the national level. However, it should be ensured that there is knowledge transfer from the

²⁴ Jones, H.P., Hole, D.G., Zavaleta, E.S. 2012. Harnessing nature to help people adapt to climate change. *Perspective*. 2. 504-509.



recruited international experts to national entities. This would strengthen national expertise, thereby enabling the recruitment of national experts for future projects.

11. Conclusion

The AF-financed project can be regarded as a guiding example in many aspects for other projects of this magnitude in Senegal. These aspects include *inter alia* the involvement of local communities, and the ongoing communication and collaboration between several national institutions – which has resulted in appreciable complementarity. It is, however, noted that several challenges were encountered in the implementation of the project and that not all of the project's objectives have been achieved. Substantial management costs have resulted in the extension of the implementation period of the project from two to four years. Subsequently, there is a lack of documentation of the activities and resulting impacts as different M&E criteria apply to projects with a duration of two and four years. The M&E system applied in the AF-financed project therefore lacks significant elements for a thorough monitoring of its impacts. Furthermore, the Environmental and Social Impact Studies have had a limited focus on the environmental impacts of the interventions on plant species and ecosystems in the intervention sites.

Several technical challenges emerged as a result of the limited national technical capacity to design and construct coastal protection infrastructure. It is important to note that the majority of the challenges are attributed to the pioneer status of the AF-financed project. It is regrettable that the impacts of the activities implemented were not thoroughly monitored, as the resulting information would have guided the replication of best practices at the national and regional levels. However, there has been a significant increase in the capacity of institutions and stakeholders involved in the implementation of the AF-financed project to undertake coastal zone management. This increased capacity is likely to contribute to the successful implementation of similar projects in the future. Finally, the CSE has demonstrated that a national entity based in a least developed country is able to independently coordinate and implement a donor-funded project.



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ANNEXES

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ANNEXES

Annex 1: The scoring used in the evaluation table

SCORING GOALS AND PROJECT RESULTS

Very satisfactory (VS): The actions/activities were undertaken as planned or better than expected to achieve all of the main objectives/results without gaps. The project can be presented as a "good practice".

Satisfactory (S): The actions/activities were undertaken as planned and contributed to the achievement of most of the main objectives/results with just a few small gaps.

Moderately Satisfactory (MS): The actions/activities were undertaken almost as planned and contributed to the achievement of some of the main objectives/results, with serious gaps, i.e. with a weak general scope.

Slightly Unsatisfactory (SU): The actions/activities were not undertaken as planned to achieve the main expected objectives/results, with significant gaps or even a possibility for only achieving some main objectives/results.

Unsatisfactory (U): The actions/activities were not undertaken well enough to achieve most of the main objectives/results.

Very Unsatisfactory (VU): The actions/activities were not undertaken as planned and will be unable to achieve any of the main objectives/results.

NB: The relevance, effectiveness and efficiency will be considered as determining criteria. The overall score of the project in terms of achieved objectives and results **may not exceed** the smallest score given for any of these three criteria. Therefore, to obtain a satisfactory overall score for the results, a project must have at least a satisfactory score for the relevance, effectiveness, and efficiency.

SCORING OF SUSTAINABILITY

Sustainability will be understood as the probability to ensure the continued existence of the project results and impacts in the long term beyond the end of the project. The final evaluation will identify and evaluate key conditions or factors that could affect or contribute to the persistence of the project impacts. Some of these factors could be the project results, that is to say, institutional capacity building, improved legal and regulatory frameworks, socioeconomic incentives or a good awareness. Other factors include contextual circumstances or developments that are not generated by the project, but which are important for the sustainability of results.

Scoring system for the sustainability sub-criteria:

Probable (P): There are no risks to this scope of sustainability.

Moderately Probable (MP): There are significant risks to this scope of sustainability.

Moderately Improbable (MI): There are significant risks to this scope of sustainability.

Improbable (I): There are high risks to this scope of sustainability.

All risk dimensions on sustainability are very important. Thus, the overall score for sustainability will not exceed the smallest score obtained for a scope of sustainability. For example, if a project has an "Improbable" score in one of the scopes, then its overall score cannot be higher than "Improbable", although higher scores in other scopes make the average higher.

SCORING OF THE MONITORING & EVALUATION PROJECT

Monitoring is a continuous function based on the systematic collection of data on the selected indicators to provide the project team and key stakeholders guidance on the extent of progress and achievement of objectives, as well as progress in the use of allocated funds. The evaluation is an objective and systematic review of an ongoing or completed project, its design, implementation and

results. The project evaluation may involve the definition of specific standards, review of performance with regard to these standards and the evaluation of current and expected results.

The M&E mechanism of the project will be scored as follows through "**the M&E design**", "**the implementation of the M&E plan**" and "**budgeting and financing M&E activities.**" **Very satisfactory (VS):** The M&E mechanism works as planned, without gaps.

Satisfactory (S): The M&E mechanism works almost as planned with just a few small gaps.

Moderately Satisfactory (MS): The M&E mechanism works quite well but with serious gaps.

Slightly Unsatisfactory (SU): The M&E mechanism does not work as planned and identifies important gaps.

Unsatisfactory (U): The M&E mechanism hardly works at all and major shortcomings are noted.

Very Unsatisfactory (VU): The project has no M&E mechanism.

The "**M&E implementation plan**" will be considered as a very important parameter for the overall evaluation of the M&E mechanism. The overall scoring of the M&E mechanism may not exceed that given for the "M&E implementation plan."

Any other score shall be given according to a six-point scale:

Performance	
VS	Very satisfactory
S	Satisfactory
M	Moderately Satisfactory
MU	Moderately Unsatisfactory
U	Unsatisfactory
V	Very Unsatisfactory

Annex 2: Mission agenda

Final Evaluation of the project entitled «Adaptation to coastal erosion in vulnerable areas» Stakeholders consulted

Location	Stakeholder	Institution	Role	Contact number	Email address	Date and time of meeting
Dakar	Aissata Boubou Sall Dethie Mohamed Ba Thiouro Codou Niang Chief Accountant Mohamed Li	CSE	Implementing entity	0776851590 0776583878 0772710923 0775297278		3 June 2015 at 10 a.m.
Dakar	Ibrahim Fall Vore Gana Seck	Green Senegal	Executing agency	0775576271 0776489441	fall.ibrahima@gmail.com greenSénégal@orange.sn	3 June 2015 at 11.30 a.m.
Dakar	XX	Direction de l'Environnement et des Etablissements Classés (DEEC)	Executing agency	XX		3 June 2015 at 3.30 p.m.
Dakar	XX	Mr Louis Ndiaye	Executing agency	XX		3 June 2015 at 5 p.m.
Rufisque		Focus group held with the representatives of the beneficiary groups				4 June 2015 at 10 a.m.
Rufisque		Site visit to the dike				4 June 2015 at 1 p.m.
Dakar	Assize Toure	Director	CSE	XX	assize@cse.sn	4 June 2015 at 5.30 p.m.
Saly		Focus group held with the representatives of the beneficiary groups				5 June 2015 at 9.30 a.m.

Location	Stakeholder	Institution	Role	Contact number	Email address	Date and time of meeting
Saly	Aliou Gning	Société d'Aménagement de la Petite Côte (SAPCO)	National organisation	0774283375	agning@sapco.sn	5 June 2015 at 3 p.m.
Joal		Focus group held with the representatives of the beneficiary groups				6 June 2015 at 9.30 a.m.
Dakar	Mme Ndéye Fatou Diaw Guène	MEDD	Authority designated by the AF	0775707809	mactarguene@yahoo.fr	8 June 2015 at 9 a.m.
Dakar	Monsieur Ernest Dione	DEEC, MEDD	Programmes Administrator at the DEEC and ex-coordinator of the DEEC's component of the project	0778866908	erdione@hotmail.com	8 June 2015 at 10 a.m.
Dakar	Secou Sarr	Enda-Energie	CBO	0770990601	secou.enda@hotmail.com	8 June at 11.30 a.m.
Dakar	Ale Badara Sy	APIX	Construction company for a partner project	0773322266	absy@apix.sn	8 June 2015 at 3.45 p.m.
Dakar	Mohamed Thiam	Cabinet 2iE	Service provider (study)	0776446670	XX	9 June 2015 at 2 p.m.
Dakar	Elhadji Ndieguene	Batiss Maritime	Entrepreneurs	0771675142	batiss.maritime@gmail.com	9 June 2015 at 3.30 p.m.
Dakar	Papa Goumbo	CEREEQ	Construction Manager	0776546155	papaglo@ucad.sn	9 June 2015 at 5 p.m.
Dakar	XX	AGETIP	Construction Manager	XX		10 June 2015 at 9.30 a.m.
Dakar	Leon Diouf	CETROUTE	Service provider (study)	0773104448	cet-route@orange.sn	10 June 2015 at 11.30 a.m.
Dakar	Boubacar Fall	Representing COMNACC	Steering body for the implementation of the NAPA	77 518 37 55		11 June 2015 at 9.30 a.m.

Location	Stakeholder	Institution	Role	Contact number	Email address	Date and time of meeting
Dakar	M. Georges	UEMOA	Financial partners	77 609 84 85		11 June at 4 p.m.
Dakar		Presentati on of preliminar y findings				12 June at 10 p.m.
Dakar	Aissata Boubou Sall Mohamed Li	Discussion regarding the finalisation of the mission				12 June at 3 p.m.

Annex 3: The project interventions implemented, successes and failures in Rufisque

Baseline situation

Thiawlène, located in the district of Rufisque, has been experiencing annual floods. This resulted in members of the community staying awake at night for two to three days per year and regularly leaving their homes for a few days at a time in the event of large swells. In addition, a portion of the cemetery was damaged in 2007, resulting in the surfacing of several bodies. This caused considerable social consequences.

Main activities implemented by the AF-financed project

- The construction of a dike in Thiawlène: A dike, measuring 730 metres in length and 23 metres in width, and was built in Thiawlène. The total cost of the dike was ~US\$ 6,120,000 of which 59% was financed by Union West African Economic and Monetary (UEMOA), 32% by the AF, 6% by the project entitled "Integrating Adaptation to Climate Change for the Sustainable Development of Senegal" (INTAC) and 3% by the government.
- The quarterly cleaning up of wastewater in the channels: The cleaning up of the canals was supported by Green Senegal for a period of two years.
- The strengthening of the neighbourhood committees, including training and the provision of cleaning equipment such as shovels and brooms;
- A change in the route used by refuse collection trucks and bins supplied to households in the area.



Photo 1. The basalt shell of the dike in Rufisque.



Photo 2. The evacuation canal which has been closed on the right end of the dike. Women and children are seen discharging grey water in the canal as demonstrated to them during the awareness-raising campaigns.

Review of the infrastructure financed by the AF in Rufisque

Positive aspects

- According to the civil engineer who accompanied the evaluator during the mission, the infrastructure is robust and well-built. Extensive swell studies as well as feasibility studies were undertaken.
- Communities are satisfied¹.

¹ The president of CODETH referred to the dike as a «jewel» which has increased the quality of living of the coastal community and the aesthetics of the coastline.

- The coastal community had previously experienced floods on an annual basis, but over the last three years, no floods have been recorded. There would have been considerable damage as a result of the centenary swell in May 2014 if the dike had not been constructed. Subsequently, the area of Thiawlène is considered protected from the centenary swell. Based on the success of the dike in Thiawlène, neighbouring coastal communities in the district of Rufisque have requested the construction of dikes along the coastline.
- The dike provides shelter for fish species such as Thiof and Willow and support for shellfish such as mussels. Therefore, the dike contributes to increasing the income of fishermen for a bigger – in size and quantity – catch. The fixed fish nets used by the fishermen are shown in Photo 3 below.
- After ownership of the dike was transferred to the municipality, a verbal agreement was provided by local government for management of the dike.



Photo 3. The fixed nets along the dike.



Photo 4. The esplanade and the cemetery are protected by a wall recently constructed and financed by the government.

Negative aspects

- An overnight discharge of wastewater containing solid waste from the dike was reported during consultations, and observed by the evaluator during the site visit (Photo 5). This discharge could potentially lead to the obstruction of the openings between the basalt blocks, thereby restricting water flow. According to the contracted construction company, EFFAGE, this obstruction is a risk to the sustainability of the dike. The discharge of water on or from the dike is currently prohibited. The authorized points of discharge sites are on both sides of the dike in the open and closed channels. The changes in the behaviour of local communities following awareness-raising campaigns were observed for a period of two years. For example, women would walk several hundred metres to discharge their wastewater. However, over the recent months, some women have begun to discharge waters on the dike.
- Small- and medium-sized rocks were noted on the esplanade during the site visit (Photo 6). The rocks present a risk to the safety of local communities and limit access to the promenade. According to the civil engineer, the movement of such small rocks do not weaken the structure.
- Puddles of stagnant water were observed on the esplanade (Photo 7). Stagnant water causes slight depressions on the esplanade which can potentially lead to the degradation of the promenade and the dike in the long-term (Photo 8).



Photo 5. Accumulation of solid waste in between the openings of the basalt rocks in the dike's shell.



Photo 6. Basalt rocks projected onto the promenade as a result of a recent storm.



Photo 7. Stagnant water on the esplanade.



Photo 8. Scouring observed at the base of the promenade on the esplanade due to stagnant water.

Recommendations

- Wastewater collection points must be provided to decrease the distance travelled by residents to dispose of wastewater. A company has recently been recruited by the municipality to construct these wastewater collection points. However, the treatment of wastewater remains a major challenge in Rufisque and consequently requires the attention of national and local authorities to ensure the sustainability of the AF-financed interventions, such as the dike in Thiawllène.
- A rainwater and/or seawater drainage system needs to be developed and implemented to avoid water stagnation on the esplanade.
- Awareness-raising campaigns focusing on the importance of waste management, including grey water and separation (filtration), needs to be undertaken on an annual basis to maintain these systems.
- Investment from local authorities is required to improve waste management, including grey water, to ensure the sustainability of the dike. For example, financial resources are required to provide equipment to neighbourhood committees, as well as to provide additional bins along the dike and to finance the upgrading of the esplanade.



Photo 9. Poles have been erected on the esplanade to delineate a football field.

List of participants of the focus group meeting held on 4 June 2015 in Rufisque.

Name	Surname	Organisation or role	Contact number
Sall	Aissata	SE/CSE	776851590
Seck	Aida	Thiawlène	
Dieng	Mohamed	President of CODETH	775264053
Mbengue	Ousmane	Vice-president of CDQTB	773835500
Beye	Mamadou Louise	Chief Technical Service CRE	773000170
Dieng	Fatou	Councillor and member of the committee	7743295118
Thiaw	Adriana	Focal Point East Municipality	773521142
Fall	Ibrahima	Director of PGN GREEN	775576271
Paiye	Badou	Secretary General of the Council of Thiawlène	774259369
Beck	Mamadou	Committee member of Rufisque	775770109
Saliou	Ba	CODETH	775462836

Annex 4: The project interventions implemented, successes and failures in Saly

Baseline situation

Considerable coastal erosion has occurred in Saly. For example, in 2002, a section of the beach in front of the Téranga Hotel was used by the national football team for training. However, the beach has almost completely disappeared. Indeed, over the last 12 years, 200-300 metres of beach has been lost. The negative effects associated with the loss of beaches are economically significant, as Saly is a major touristic attraction in Senegal. The loss of beaches could therefore lead to the closure of hotels, such as Savanna Hotel – which shut down in 2014 – and Hotel Espadon. The closure of Savanna Hotel resulted in the loss of a significant source of employment for local communities and a decrease in demand for local products, such as fruits, vegetables and fish.



Photo 1. A pool that had been previously degraded by wave action recorded on the construction site for the seawall.



Photo 1. Several protection methods against coastal erosion implemented in front of a hotel in Saly.

Review of the infrastructure financed by the AF in Saly

The two seawalls in Saly were constructed to protect against erosion and rehabilitation of the fishing dock and fish processing area of Saly-Coulang, as well as: i) the rehabilitation of the fishing dock's foundations, the construction of the fishing dock's retaining wall and the artificial beach replenishment with laterites in the vicinity of the fishing dock; ii) the construction of the washing basins; iii) the construction of shelters to improve working conditions; iv) the construction of ; v) access to water at the fishing dock; and vi) the installation of the solar lighting.



Photo 3. The seawalls financed by the AF project in Saly.



Photo 4. A seawall constructed in Saly.

The challenges experienced in the construction of the seawalls in Saly

Although a feasibility study was undertaken, there were different opinions on the construction material to be used – between laterite and basalt – for the construction of the seawalls. This has resulted in conflict between the executing agency, the construction manager and the construction company. Additionally, the cost of using basalt in the construction of the seawalls was under-estimated initially in the budget. Should laterite had been used – as opposed to basalt – the allocated budget would have been sufficient in ensuring the construction of nine seawalls as originally planned. However, there were concerns regarding the potential degradation of laterite in the long-term, and as a result, basalt was selected as the preferred construction material. The first order of basalt could not be used due to limestone inclusions and therefore the implementation of the seawalls in Saly was delayed. The basalt blocks were initially meant to be brought in by boats, however this was not feasible due to the rocky seabed. This further delayed the implementation process which resulted in a review of the construction strategy. Moreover, a reshuffle of the DEEC's staff including the officials managing the AF-financed project occurred in August 2013 thereby resulting in further delays in the implementation of activities in Saly.



Photo 5. The extremity of one of the seawalls which contains laterite blocks on the right and basalt blocks on the left and on top.

Review of the infrastructure financed by the AF in Saly

Positive aspects

- There has been a considerable replenishment of the beach close to the small dike opposite the first seawall constructed.
- The seawalls constructed through the AF-financed project protected the waste water treatment plant against coastal erosion.
- The seawalls provide shelter for fish and a resting place for birds such as pelicans, which improves fishing and tourism.
- As a result of the awareness-raising campaigns, fish processing women ensure that grey water is filtered before any discharge and sand extraction has been halted. The fish processing women in Saly expressed their satisfaction with the training provided in micro-financing and management. The application of these concepts in their daily lives has been beneficial.
- The fish processing women operate in improved working conditions as a result of: i) shelters constructed; ii) increased safety in the fish processing area within the fishing dock as it is no longer affected by wave action; and iii) access to water, thereby reducing time spent commuting and consequently increasing production. According to the representative of the fish processing women's group who participated in the focus group meeting, the rehabilitation of the fishing

dock by the AF-financed project has considerably reduced the processing time of one tonne of fish from one week to three days.

- The sanitation committee established in Saly meets every Saturday to clean up the fish processing area, thereby demonstrating the community's commitment to maintaining the infrastructure provided by the AF-financed project.



Photo 6. One of the seawalls financed by the AF used as a breeding ground for seabirds.



Photo 7. Beach replenishment prior to the construction of the first seawall financed by the AF.

Negative aspects

- The hotel group and the villagers do not support the AF-financed project.
- A significant portion of the total budget – i.e. over US\$ 1,500,000 – has been used for the construction of two seawalls, which have been limited in their effectiveness.
- Signs of degradations have already been noted on drying grids and the supporting pillars.
- The solar lighting system installed is no longer functional as the panels have not been adequately maintained.
- The washing basins have been under-utilised due to their poor design. The shallow slope at the bottom of the trays does not allow for water drainage.



Photo 8. Under-utilised washing basins fitted with a water drainage system financed by the AF project.



Photo 9. One of the two shelters financed by the AF project in the fishing dock and fish processing area in Saly.



Photo 10. Drying grids and supporting structures rehabilitated by the AF-financed project.



Photo 11. The basement of the fishing dock and a retaining wall rehabilitated and the replenishment of laterites financed by the AF.



Photo 12. Solar lighting system financed by the AF which is no longer functional.



Photo 13. Second shelter financed by the AF with a plaque indicating the source of financing. Degradation of the shelter is apparent.

Recommendations

- It is essential to train local communities on the continuous maintenance of solar lighting system. For future projects, the executing agencies need to ensure that local communities are trained in the maintenance of all equipment provided to them. Alternatively, they need to have the financial capacity to contract a local expert for maintenance of the equipment provided.
- It is highly recommended to work in close collaboration with the World Bank's project team to: i) share lessons learned and experience gained over the four years of the project implementation; and ii) meet the needs of the communities initially targeted by the AF-financed project; and iii) complement the infrastructures financed by the AF.

List of participants of the focus group meeting held on 5 June 2015 in Saly.

Name	Surname	Organisation or role	Contact number
Sall	Aissata B.	CSE	776851590
Diouf	Bouny	DEEC	772216287
Palazy	Lucille	C4EcoSolution	lucille.palazy@c4es.co.za
Sene	Ousmane	President of the fishing group in Saly	774447958
Seck	Ichady	CLP/Neighbourhood Committee	781928993
Ndeye Fady	Niany	President of Action Sociale	776351239
Aby	Thiamdoume	President of Femme XXX	
Fatou	Fall	Fish processing woman	773164046
Ndaye	Abdoulaye	Representative of the neighbourhood committee in the area of Saly-Niakh	775949268
Pouye	Demba	President of the committee of Saly-Niakh	773791321
Sech	Penda	REAL	779276650
Diouf	Elisabeth	Representative of the neighbourhood committee	773144514
Diouf	Faton	Representative of the neighbourhood committee	772592209
Seck	Fatou	Representative of the neighbourhood committee of Saly-Coulang	
Dieynaba	Dione	President of the neighbourhood committee of Saly-Coulang	771277019
Saly	Diouf	Fish processing woman in the area of Saly-Coulang	
Chiauv	Rohlya	Area of Saly-Goulay	773853906
Ndeye Fatou	Thiam	Representative of the neighbourhood committee	777048241
Marietou	Thiaudoum	Fish processing woman in the area of Saly-Coulang	
Lo	Nogoye	Fish processing woman in the area of Saly-Coulang	
Faye	Fatou Diop	Fish processing woman in the area of Saly-Coulang	
Sene	Mame	Fish processing woman in the area of Saly-Coulang	
Thiaudoum	Marience	Area of Saly-Coulang	
Gueye	Babacar	Municipality of Saly	775653384

Annexe 5: The project interventions implemented, successes and failures in Joal-Fadiouth

Baseline situation

- An anti-salt dike was constructed in the 1950s in Joal, and it supported rice cultivation until the late 1990s. An increase in soil salinity has reduced the effectiveness of the dike and contributed to its degradation. Thereafter, rice cultivation was halted in Joal.
- Several other sources of funding have already been received to improve the fish processing area in Khelcom. For example, the EU financed the construction of shed infrastructures and ablution facilities, however, these were not completed as sections of the walls were missing. According to the beneficiaries, the construction was not completed due to a disagreement between the EU and the construction company.
- Traditional fish smoking kilns currently used in Joal have resulted in considerable air pollution, which has negative consequences on the health of the local population. Consequently, an increase in the incidence of acute respiratory infections was recorded in Joal. A request was made for a study to be undertaken with the aim of measuring the effect of the use of these fish smoking kilns on health.
- During high tide, water used to reach the wall of the fishing dock. The fishermen could not access the fishing dock by foot or by boat because of obstruction caused by sand.



Photo 1. Traditional fish procession area in proximity to the anti-salt dike and smoke which is a health hazard is generated by the kilns. *Photo 2. Example of a fish smoking kiln 6 metres in length.*

Review of the infrastructure financed by the AF in Joal

- An anti-salt dike of 3,300 metres consisting of a left bank (1,500 metres) and a right bank (1,800 metres) was built to release land for rice cultivation. The two sides are separated by a water discharge basin, which allows water retention at high tide.
- A set of activities to secure the fishing dock was funded by the AF. This includes the construction of a gabion protection wall of 382 metres in length to protect the fishing dock against erosion. Over 80% of the pillars of the shed were rehabilitated and the walls of the hangar were painted – on the inside and outside – by the AF-financed project. Additionally, a protection system was set up on the pillars at the delivery point in the fishing dock.
- 90 fish smoking kilns, 90 washing basins and two wells were constructed in Khelcom. The existing ablution facilities and sheds were rehabilitated. All of these activities aimed to improve the working conditions of the fish processing area in Khelcom as well as the quality of the finished products.



Photo 3. A portion of the left bank of the of the anti-salt dike in Joal.



Photo 4. An element of the anti-salt dike, i.e. a rainwater discharge point, made of concrete which allows the drainage of surplus rainwater.



Photo 5. Fish smoking kilns, tables and drying grids financed by the AF in Khlecom.



Photo 6. Prototype of a fish smoking kiln used for tests.



Photos 7 and 8. A shed structure rehabilitated by the AF-financed project which now has access to water.



Photos 9 and 10. The pillars of the fishing dock were rehabilitated and the walls were painted.

Review of the infrastructure financed by the AF in Joal

Positive aspects

- The first dike constructed in Joal was made of sand and had a life span of ~ 20 years. The new dike is mainly made of laterite and is expected to be relatively more sustainable.
- A net desalination was observed on the left side of the bank and the first half section of the right bank. This allowed rice cultivation activities to begin within the first year of the construction of the dike.
- The beneficiaries stated that the construction of the dike reduced the mortality rate of fruit trees upstream and an increase of certain species such as *Adansonia digitata* (baobab) and acacia *Acacia* sp. and *Leucaena leucocephala* in proximity to the dike. Additionally, an increase in the yield of crops such as millet was reported upstream of the dike.
- The infrastructure rehabilitated by the AF-financed project within the port is robust and has increased the safety of its users.
- The agreement with the EU is still valid as a result of the rehabilitation of the port.
- Beach replenishment was observed on a large portion of the area located between the port and the seawall which provides an effective barrier against waves.
- The Mayor has signed an agreement with Dynamique Femme stipulating that an annual financial contribution will be allocated for the maintenance of the coastal protection interventions financed by the AF.



Photo 11. The water discharge basin on the anti-salt dike whereby the right and left banks meet, seawater is retained between the two openings and fresh water is retained upstream during precipitation.



Photo 12. Bags demarcating the land parcels that were under rice cultivation in 2014.



Photo 13. The dike and fishing dock almost entirely covered in sand. .



Photo 14. Artificial sand replenishment of the area between the fishing dock and the dike by means of shells and sand.

Negative aspects

- Saltwater intrusion was observed by the evaluator over the last hundred metres of the right bank.
- Based on consultations, there is a potential risk that the beneficiaries of the land parcels and fish processing area were not clearly identified. This could lead to the facility in Khelcom remaining under-utilised and lead to conflicts within the community when the rice growing areas become productive.
- The infrastructure constructed and rehabilitated in Khelcom are currently not in use and the first signs of degradation have already been observed. For example, rust on the railings and corrosion of the walls of the fish smoking kilns were recorded. It is important to note that the warranty period is nearly over and the fish smoking kilns have not yet been tested.
- Some defects in the sewage system and paving at the fishing dock were also recorded.
- Scouring was observed at the base of the rainwater discharge points and on the anti-salt dike.
- There is a potential risk that the dike will negatively impact mangroves by increasing salinity as a result of decreased freshwater flow into the sea.



Photo 15. Illegal sand extraction upstream of the anti-salt dike financed by the AF.



Photo 16. Scouring at the base of the rainwater discharge point and a crack in the wall.



Photo 17 and 18. Degradations observed on the fish smoking kilns: i) the door no longer closes appropriately as a result of the rusting of the hinges; and ii) rust in the drawers.

Recommendations

- It is suggested that the selection process for the beneficiaries of the fish processing area in Khelcom, as well as lands released for rice cultivation, be clarified. This would ensure that the infrastructure developed and rehabilitated in Khelcom is operationalised and that potential sources of conflict avoided.
- It is recommended that the beneficiaries are provided with a labelling support system to promote the use of the fish smoking kilns financed by the AF to maximise their economic benefits.
- Delineate the activities undertaken in Joal, such as fish processing, rice cultivation, livestock and sand extraction by means of land use maps. This will promote the management and sustainability of these activities, and increase the benefits derived from the interventions financed by the AF.
- Prior to sourcing funds for the additional 2 km of dike requested by the beneficiaries, it is recommended to focus on the development of land already released by the left bank. This can be done through reforestation, delineation and cleaning up of the area. Monitoring of the site needs to be undertaken to prevent illegal sand mining, degradation of the dike, deforestation and regulation of water discharge. Once the lands released by the AF-financed project become productive, it would be easier to obtain funds for the extension of the dike.

List of participants of the focus group meeting held on 6 June 2015 in Joal.

Name	Surname	Organisation or role	Contact number
Sall	Aissata B.	CSE	776851590
Diam	Gabriel	Representative of the maternal line system	775193756
Jiouf	Louis	Representative of Fadiouth	778025437
Faye	Babacar	Member of the management committee	776189605
Niaroum	Diouf	Fish processing woman	763857517
Gaye	Ali	Accountant at AMP	772484816
Saer	Idriss	Dynamique Femme	77503715955
Lalyre	Louis William	Manager of the fishing dock	775687185
Diagne	Khady	Fish processing woman	773771353
Ndong	Paul	Representative of the community	774352863
Sidibe	Abdoulaye	Dynamique Femme: Assistant	773203004
Diokh	Coumba	Dynamique femme: General Secretary	777954412
Ndiaye	Henriette	Member of Dynamique Femme	777002497
Guege	Mamadou moustapha	Chief Forest Squad	776512130
Diouf	Boubar	Mayor of Joal-Fadiouth	776462611
Ndeye Tening	Dioue	SRPST/J	777053678
Diop	Rose	GIE Gulookwe	771758879
Njaay	Mari	GIE Gulookwe	777556292
Samb	Ibrahima	President of the fishing dock	772309029
Gueye Ganna	Pape		773671258
Ndeyo Mberrry	Lette	Member of Dynamique Femme	777068490
Diop	Cheikh	Environmental manager at the port	774571031
Gueye	Toutane	Member of Dynamique Femme	
Ndiaye	Anna	Artificial beach replenishment / Member of Dynamique Femme	771489764
Faye	Maliame	Maintenance committee	776179605

Annex 6: Presentation of the preliminary results of the Final Evaluation held on Friday 12 June 2015



Projet Fond d'Adaptation: Adaptation à l'érosion côtière à Saly, Rufisque et Joal.

EVALUATION FINALE Présentation des résultats préliminaires

12 Juin 2015
Dakar



Dr L. Palazy



Structure de la réunion

	Sujet	Intervenant
1	Résultats de l'évaluation	L. Palazy
2	Analyse des ouvrages	M. Ly
3	Perspectives	L. Palazy



Structure de la présentation: Résultats de l'évaluation

- A. Rappel sur les objectifs de l'évaluation
- B. Les interventions par site: observations
- C. Adéquation avec les objectifs, indicateurs et cibles initiaux
- D. Adéquation avec les cibles des indicateurs du Fond d'adaptation
- E. Table d'évaluation



A. Rappel sur les objectifs de l'évaluation

Objectif général:

Faire une **évaluation critique** des réalisations du projet.

Les différentes étapes pour atteindre cet objectif:

- Analyse des **résultats et effets** du projet sur le **court et moyen terme**;
- Analyse de l'adéquation entre les résultats obtenus et les **objectifs et cibles initiales**;
- Synthèse des **expériences et leçons apprises** pour renseigner les futurs projets du Fond d'Adaptation et du pays; et
- Evaluation du système de **maintien sur le long terme** des interventions.



B. Evaluation des interventions par site

1. Rufisque
2. Saly
3. Joal



B. Evaluation des interventions par site

Dans les 3 sites: observations positives

- Très bonne **connaissance des acteurs locaux** sur le projet;
- Très bonne **appropriation** du projet par les communautés;
- Opinion positive des bénéficiaires sur l'**atteinte des objectifs**, excepté pour les brise-lames de Saly;
- Initiatives locales en place pour l'**entretien** et volonté de **maintien** des infrastructures;
- Projet FA = pilote qui apporte des informations cruciales sur deux **aspects novateurs** à l'échelle nationale et internationale: i) le transfert de fonds direct d'un bailleur de fond à une entité nationale; et ii) les infrastructures de lutte contre l'érosion côtière en Afrique; et
- Amélioration des **conditions de vie** des communautés dans les trois sites notamment en termes de sécurité.



B. Evaluation des interventions par site

Dans les 3 sites: observations négatives

- **Objectifs, indicateurs et cibles** initialement définis dans le document de projet étaient peu précis;
- Des manquements dans l'**EIE** et plan de surveillance;
- Une identification des **bénéficiaires** pas toujours claire;
- Un manque d'**expertise pratique** au niveau national entraînant des problèmes dans la réalisation;
- Une **capacité financière** limitée pour le maintien des infrastructures obtenues grâce au Fond d'Adaptation.



B. Evaluation des interventions par site

Rufisque: observations positives

- Bénéficiaires: environ 151 concessions et quelques pêcheurs;
- **Digue** efficace et robuste, quartier de Thiawlene moins vulnérable aux inondations; et
- Apporte un abri pour les poissons, support pour les coquillages et augmente le revenu des **pêcheurs** (ligne, filets dormants) qui attrapent plus de poissons et de plus grande taille.



B. Evaluation des interventions par site

Rufisque: observations négatives

- Déversement des **eaux usées** grises avec des déchets solides sur la digue, risque d'obstruction des espaces de circulation de l'eau, menace la durabilité de la digue.



B. Evaluation des interventions par site

Rufisque: recommandations

- Suffisamment de **réceptacles pour les eaux usées grises** (une entreprise a été recrutée récemment pour construire un vidoir), doivent être fournis à proximité de la digue;
- Les campagnes de **sensibilisation** sur l'importance de la gestion des déchets et des eaux grises, et leur séparation (filtration) doivent être faites annuellement; et
- Soutien des **collectivités locales** nécessaire pour l'amélioration de la gestion des eaux usées et des déchets par exemple pour l'équipement des comités de quartier et l'ajout de poubelles le long de la digue.



B. Evaluation des interventions par sites

Rufisque

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
1.1 Mettre à jour les études de faisabilité techniques pour la conception des infrastructures de protection à Rufisque.	Nombre de rapports d'études	Une étude validée a Rufisque.	Etude de Rufisque mise a jour.	Etude de Rufisque mise a jour.
1.2 Construction des infrastructures de protection a Rufisque pour les logements et bâtiments a valeur économique et culturelle.	Longueur de côte protégée en metres linéaires.	6,000 km2 menaces par les inondations.	Travaux de protection a Rufisque réalisés (381 m linéaires de mur construits avec le FA).	Construction digue de 730 mètres donc 234 m financés par le FA.
Nettoyage des canaux et connexion avec la mer (avec forte implication des communautés)	Nombre linéaire de canaux épurés.	Infrastructures côtières et logements très menacés.	Canaux nettoyés et connectés a la mer.	2 canaux (XX m) nettoyés et connectés a la mer.



B. Evaluation des interventions par site

Saly: observations positives



- Bénéficiaires : communauté de pêcheur avec 100 pirogues (2 ou 3 pêcheurs par pirogues) + 50 femmes transformatrices.
- **Re-ensablement** visible de la plage au niveau de la base de la diguette en face du premier brise lame;
- Protection de la **station d'épuration** ;
- Brise lames comme **habitat** pour les poissons et reposoirs à oiseaux;
- Les femmes transformatrices sensibilisées filtrent leurs eaux grises (+ utilisation d'un système de microfinance); et
- Femmes transformatrices ont des **conditions de travail** améliorées grâce aux points d'ombres.



B. Evaluation des interventions par site

Saly: observations négatives

- **Hôteliers** et une partie des **communautés** mécontentes;
- Brises lames ont couté cher et ont une **efficacité** très limitée;
- L'**éclairage solaire** ne fonctionne plus; et
- Les **bacs de rinçage** n'ont jamais réellement été utilisés par les femmes car ils n'ont pas bien été réalisés.



B. Evaluation des interventions par site

Saly: recommandations

- Former les communautés pour l'**entretien** du système solaire;
- Le mécontentement des parties prenantes aurait pu être réduit si elles (les pêcheurs, transformatrices et hôteliers) avaient été plus **impliquées/mieux informées** (ex: pourquoi commencer côté hôtel plutôt que côté village); et
- Utiliser l'ensemble des **leçons apprises** pour le projet Banque Mondial.



B. Evaluation des interventions par site

Saly

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
2.1 Réaliser et valider les études de faisabilité pour les ouvrages de protection de la zone côtière de Saly.	Rapport d'étude.	Pas d'étude réalisée.	Etude réalisée et validée.	Etude réalisée et validée.
2.2 Réaliser les infrastructures de protection des zones vulnérables y compris les hôtels, les villages et le quai de pêche à Saly.	Longueur de côte protégée en mètres linéaires.	3 km2 menaces par les inondations.	Travaux de protection à Saly réalisés.	2 brises sur 9 réalisés, protection de 200 m environ.
2.3 Soutenir l'aménagement du quai de pêche et de l'aire de transformation du poisson à Saly.	Existence d'un quai de pêche solide et d'une bonne aire de transformation	Destruction du quai et de l'aire de transformation a cause de la mer.	Quai et aire de transformat ion développés	Quai et aire de transformati on développés.



B. Evaluation des interventions par site

Joal: observations positives

- Bénéficiaires: pêcheurs (2000 grandes pirogues) + **XX** femmes transformatrices + **XX** cultivateurs de riz.
- **Désalinisation** coté rive gauche et majorité rive droite;
- D'après les bénéficiaires, **mortalité** des arbres fruitiers en amont de la digue réduite, régénération de certaines espèces telle que les baobabs et Acacia en amont et augmentation du rendement des cultures comme le mil;
- Infrastructures du **port** solides, réduisent l'insécurité;
- Réduction importante de l'**exploitation du sable** et **arrêté**, et meilleure **gestion des déchets** sur la plage;
- Réhabilitation du port a permis maintien de l'**agrément UE**;
- **Re-ensablement** important de la digue de protection du port qui offre un bon rempart contre les vagues ; et
- Nettoyage des **plages** hebdomadaire.



B. Evaluation des interventions par site

Joal: observations négatives

- **Intrusion marine** observée sur les dernières centaines de mètres de la rive droite;
- Les **bénéficiaires** des parcelles de riz n'ont pas été clairement identifiés ce qui pourrait causer des conflits lorsque les terres deviendront productive;
- Dégradation de la **digue** par passage des charrettes;
- Les **bénéficiaires** de Khelcom n'ont pas été clairement identifiés;
- Les **installations** de Khelcom ne sont pas utilisées et des premiers signes de dégradation sont observés; et
- Potentiel impact négatif de la digue sur la **mangrove** par augmentation de la salinité à la suite de la diminution de la circulation de l'eau.



B. Evaluation des interventions par site

Joal: recommandations

- Déterminer en urgence un système de **sélection des bénéficiaires** avec des critères précis et transparents pour Khelcom et les parcelles de rizière récupérées;
- Formations à l'utilisation et l'entretien, et accompagnement pour la **labellisation** à apporter au groupe sélectionné; et
- Se focaliser sur la **valorisation des terres** libérées par la rive gauche (reboisement, délimitation et nettoyage de la zone d'exploitation, productivité, la surveillance du site) avant d'essayer d'allonger la digue.



B. Evaluation des interventions par site

Joal

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
3.1 Faire l'étude de faisabilité pour la conception d'une digue anti-sel dans les rizières à Joal et réaliser les infrastructures.	Rapports d'étude, nombre de bordures et de digues construites.	Les zones de riziculture sont affectées par l'intrusion de l'eau de mer.	Etude réalisée et digue anti-sel construite.	Etude réalisée et digue anti-sel construite.
3.2 Protéger les plages et développer l'aire de transformation du poisson.	Digues de protection des plages et aire de TDP réalisés.		Protection et développement des plages et de l'aire de TDP.	Pas de digue de protection des plages; aire de TDP réalisée.



B. Evaluation des interventions par site

Joal

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
3.3 Restaurer la propreté des plages.	Mise en place d'un programme rationnel et efficace de gestion des déchets de la plage.	La plage est utilisée comme toilettes et le système de gestion des déchets est mauvais.	Système de gestion des déchets mis en place.	Charrettes, petit matériel et formations fournis aux comités d'assainissement ; nettoyage hebdomadaire
3.4 Sensibiliser et former les femmes sur la gestion environnementale				Campagnes de sensibilisation et formation sur la gestion des écosystèmes dans chaque site.



B. Evaluation des interventions par site

Indicateurs nationaux

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
4.1 Créer, affiner et renforcer les textes de loi sur la gestion du littoral en considérant le CC; code l'environnement et autres textes.	Nombre et type de support légaux développés et mis en œuvre.	Pas de supports légaux (ou inadéquates) traitant de la gestion du littoral et considérant le CC.	Supports légaux pour la gestion du littoral et la prise en compte du CC créés.	2 documents légaux développés mais pas mis en œuvre.
4.2 Communication sur les textes élaborés.	Nombre de séances de popularisation et de participants.	Les communautés ont très peu d'information sur les supports légaux.	Les textes sont produits et popularisés.	Une campagne de sensibilisation dans chaque site sur les deux textes; 31 participants.



B. Evaluation des interventions par site

Indicateurs nationaux

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
5.1 Développer et mettre en œuvre un programme de sensibilisation pour les communautés locales sur les nouvelles techniques d'adaptation en zone côtière.	Rapport d'étude.	L'éducation sur l'adaptation reste une priorité nationale.	Une campagne de formation et sensibilisation est réalisée.	Plus de 10 événements de formation/sensibilisation.
5.2 Affiner et diffuser les outils de communication adéquate.	Nombre et type d'outils de communication développés.	Pas d'outils de communication adéquate développés par les projets pour diffuser les leçons apprises sur l'adaptation.	Les outils de communication adéquate sont développés et partagés.	14 émissions de radio à Rufisque et Saly; 4 types de plaquettes distribuées; mobilisations des élèves; séances de discussion communautaires



B. Evaluation des interventions par site

Indicateurs nationaux

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
5.3 Informer, sensibiliser et former les communautés sur les techniques d'adaptation en zone côtière.	Nombre d'événements de formation et de participants.	Le système de partage de connaissance est encore peu connu.	Communautés informées, sensibilisées et formées sur les techniques d'adaptation en zone côtière.	Plus de 10 événements de formation/sensibilisation et 149 participants .
5.4 Former les différents groupes cibles sur les nouveaux textes de loi.	Nombre de groupes cibles formés.		Les différents groupes sont formés sur les nouveaux textes de loi.	XX groupes .


B. Evaluation des interventions par site

Indicateurs nationaux

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
6.1 S'assurer du suivi et de la supervision des activités du programme.				Supervision réalisée, suivi à améliorer.
6.2 Evaluation externe et audit.				En cours.
6.3 Contrôle des réalisations.				Réalisé.




C. Adéquation avec les objectifs initiaux

Objectifs stratégiques	Résultats	Notes
<p>OS1: Mettre en œuvre des actions pour protéger les zones côtières de Rufisque, Saly et Joal contre l'érosion, dans le but de protéger les habitations et les infrastructures économiques menacées par l'érosion y compris les aires de transformation du poisson, les quais de pêche, les infrastructures touristiques ou culturelles et restaurer les activités perdues ou menacées</p>	<p>Résultat 1: les populations, habitats et infrastructures économiques et culturelles des zones côtières de Rufisque, Saly et Joal sont protégées contre l'érosion côtière.</p>	<p>S</p> 
<p>OS2: Mettre en œuvre des actions pour lutter contre la salinisation des terres agricoles utilisées pour cultiver le riz à Joal, avec la construction d'une digue anti-sel</p>	<p>Résultat 2: les terres rizicoles et d'autres cultures à Joal sont protégées et restaurées contre la salinisation et les activités agricoles sont reprises.</p>	<p>S</p>



C. Adéquation avec les objectifs initiaux

Objectifs stratégiques	Résultats	Notes
<p>OS1: Mettre en œuvre des actions pour protéger les zones côtières de Rufisque, Saly et Joal contre l'érosion, dans le but de protéger les habitations et les infrastructures économiques menacées par l'érosion y compris les aires de transformation du poisson, les quais de pêche, les infrastructures touristiques ou culturelles et restaurer les activités perdues ou menacées</p>	<p>Résultat 1: les populations, habitats et infrastructures économiques et culturelles des zones côtières de Rufisque, Saly et Joal sont protégées contre l'érosion côtière.</p>	<p>S</p> 
<p>OS2: Mettre en œuvre des actions pour lutter contre la salinisation des terres agricoles utilisées pour cultiver le riz à Joal, avec la construction d'une digue anti-sel</p>	<p>Résultat 2: les terres rizicoles et d'autres cultures à Joal sont protégées et restaurées contre la salinisation et les activités agricoles sont reprises.</p>	<p>S</p>




B. Evaluation des interventions par site

Indicateurs nationaux

Action	Indicateur	Niveau de base	Cible attendue	Cible réalisée
6.1 S'assurer du suivi et de la supervision des activités du programme.				Supervision réalisée, suivi a améliorer.
6.2 Evaluation externe et audit.				En cours.
6.3 Contrôle des réalisations.				Réalisé.




C. Adéquation avec les objectifs initiaux

Objectifs stratégiques	Résultats	Notes
<p>OS1: Mettre en œuvre des actions pour protéger les zones côtières de Rufisque, Saly et Joal contre l'érosion, dans le but de protéger les habitations et les infrastructures économiques menacées par l'érosion y compris les aires de transformation du poisson, les quais de pêche, les infrastructures touristiques ou culturelles et restaurer les activités perdues ou menacées</p>	<p>Résultat 1: les populations, habitats et infrastructures économiques et culturelles des zones côtières de Rufisque, Saly et Joal sont protégées contre l'érosion côtière.</p>	<p>S</p> 
<p>OS2: Mettre en œuvre des actions pour lutter contre la salinisation des terres agricoles utilisées pour cultiver le riz à Joal, avec la construction d'une digue anti-sel</p>	<p>Résultat 2: les terres rizicoles et d'autres cultures à Joal sont protégées et restaurées contre la salinisation et les activités agricoles sont reprises.</p>	<p>S</p>



C. Adéquation avec les objectifs initiaux

Objectifs stratégiques	Résultats	Notes
<p>OS3: Aider les communautés locales de la zone côtière de Joal, en particulier les femmes, dans le contrôle des aires de transformation du poisson des districts situés le long du littoral et exécuter un programme de sensibilisation et de formation liées à l'adaptation et à ses effets néfastes</p>	<p>Résultat 3: la population vivant dans la zone côtière de Joal, à travers la mairie, a mis en place un système de gestion des déchets efficace et rationnelle, les aires de transformation de poisson sont rénovées avec une forte implication des Femmes</p>	<p>MI</p> 
<p>OS4: Communiquer sur l'adaptation, sensibiliser et former les populations locales sur les techniques d'adaptation au changement climatique dans les zones côtières et sur les bonnes pratiques, éviter une aggravation des diverses situations Expérimentées</p>	<p>Résultat 4 : les populations sont sensibilisées et informées sur les techniques d'adaptation aux changements climatiques dans les zones côtières et sur l'exécution du cadre réglementaire de la gestion des régions côtières.</p>	<p>S</p>



C. Adéquation avec les objectifs initiaux

Objectifs stratégiques	Résultats	Notes
<p>OSS: Élaborer et mettre en œuvre un cadre réglementaire approprié pour la gestion des zones côtières.</p>	<p>Résultat 5.1: Un cadre réglementaire couvrant tous les domaines concernés est développé, le code de l'environnement est revu, la loi sur le littoral est adoptée. Ces deux documents incluent la question du changement climatique.</p>	<p>MS</p>



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (1)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Capacité d'adaptation accrue au sein des secteurs de développement et de ressources naturelles appropriées	Infrastructures en dur améliorées pour atténuer le stress lié au changement et la variabilité climatique	1 (rien à Saly et une digue en pierre très rudimentaire à Rufisque)	5 (amélioration totale)	Rufisque: 5 (amélioration totale); Saly: 2 (amélioration légère);
Renforcement des infrastructures en dur, naturelles et sociales vulnérables aux effets du CC	Nombre d'infrastructures renforcées ou construites pour atténuer les effets du changement de la variabilité climatique	0 infrastructures de protection à Saly, 1 digue en pierre rudimentaire à Rufisque.	2 infrastructures de protection côtière	Rufisque: 1 digue; Saly: 1 mur de protection et 1 brises-lames; Joal: 1 gabions protection quai



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (2)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Capacité d'adaptation accrue au sein des secteurs de développement et de ressources naturelles appropriées	Infrastructures en dur améliorées pour atténuer le stress lié au changement et la variabilité climatique	1 (zone de culture du riz abandonnée à cause de la salinisation)	5 (amélioration totale)	Joal: 3 (amélioration modérée)
Renforcement des infrastructures en dur, naturelles et sociales vulnérables aux effets du CC	Nombre d'infrastructures renforcées ou construites pour atténuer les effets du changement de la variabilité climatique	Pas d'infrastructure de contrôle de la salinité.	5 infrastructures de contrôle de la salinité	Joal: 1 digue anti-sel



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (3)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Moyens de subsistance et activités économiques des personnes vulnérables diversifiées et renforcées dans les zones du projets.	Pourcentage des foyers et communautés dont l'accès a des moyens de subsistance est accrue.	1 (pas d'amélioration)	4 (forte amélioration)	Saly: 3 (amélioration modérée); Joal: 2 (amélioration légère); Rufisque: 2 (amélioration légère)



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (4)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Stratégies de subsistance des individus et communautés cibles renforcées face au CC.	Nombre et type d'apports (infrastructures ou connaissance) construits pour soutenir les stratégies de subsistance.	1 aire de transformation artisanale du poisson, 1 zone de transformation et un quai en mauvaise condition, faible connaissance sur les effets du CC et les stratégies d'adaptation	2 zones de transformation du poisson développées, 1 quai de pêche réhabilité, plusieurs campagnes de sensibilisation.	Joal: 1 aire de transformation et 1 quai de pêche; Saly: 1 aire de transformation ; 3 campagnes de sensibilisation (1 dans chaque site)



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (5)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Connaissance et appropriation des processus d'adaptation et de réduction des risques climatiques au niveau local.	Pourcentage des communautés cibles qui connaissent les effets attendus du CC et les réponses appropriées.	2: connaissance partielle	4: connaissance majeure	4 pour l'érosion côtière; 3 pour le CC



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (6)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Participation des groupes cibles à des activités de sensibilisation sur l'adaptation et la réduction des risques.	Nombre et types d'actions et stratégies mises en œuvre au niveau local.	Education a reste une priorité nationale. Pas d'outils adéquates pour identifier et disséminer les leçons apprises sur l'adaptation dans les projets. Mécanismes d'échange de connaissance peu connus.	Programme de formation et de sensibilisation crée et mis en œuvre. Outils de communication adéquate développés et partages. Les gens sont informés, sensibilisés et formes sur les techniques d'adaptation au CC en zones côtières. Les groupes cibles sont formes sur les nouvelles régulations sur l'adaptation.	Plus de 10 formations; 14 émissions de radio à Rufisque et Saly; 1 à 2 visites à domicile par foyer/site; 4 types de plaquettes distribués; mobilisation des élèves; 1 formation/site sur les nouvelles régulations



D. Adéquation avec les cibles des indicateurs du Fond d'adaptation (7)

Résultat	Indicateur	Niveau de base	Cible attendue	Cible atteinte
Politiques et réglementations améliorées pour promouvoir et appliquer les méthodes de résilience.	Les priorités liées au CC sont intégrées dans la stratégie de développement nationale.	2: Majoritairement non intégrées.	4: Majoritairement intégrées.	4: Majoritairement intégrées.
Amélioration de l'intégration des stratégies d'adaptation au CC dans les plans de développement.	Nombre, type et secteur des documents de loi introduites ou ajustées pour adresser les risques induits par le CC.	Pas de documents de loi (ou inadéquates) sur la gestion du littoral avec considération du CC. Les gens ont très peu d'information sur les documents de loi.	Code de l'Environnement mis à jour; loi du littoral élaborée; les textes sont popularisés.	2 documents créés/mis à jour; 1 campagne d'information sur ces textes dans chaque site.



E. Table d'évaluation (1)

Critère	Note MTR	Note TE
Atteinte des objectifs et résultats du projet (notation générale)	MS	MS
Sous critères (ci-dessous)		
Pertinence	S	TS
Efficacité	S	MS
Efficience		S
Durabilité des résultats du projet (notation générale)	P	MP
Sous critères (ci-dessous)		
Financier	MI	MP
Socio politique	P	MP
Cadre institutionnel et gouvernance	MP	P
Ecologique	MP	MI
Incertitude climatique		MP



E. Table d'évaluation (2)

Critère	Note MTR	Note TE
Réalisation des activités		
Suivi et Evaluation (notation générale)	MS	MS
Sous critères (ci-dessous)		
Dispositif de S&E	S	TS
Plan de mise en œuvre du S&E (utilisé pour la gestion adaptative)	S	MS
Budgétisation et financement des activités de S&E		S



E. Table d'évaluation (3)

Critere	Note MTR	Note TE
Rôle catalytique	MI	S
Pertinence par rapport aux priorités nationales en matière de développement et d'adaptation au changement climatique	S	S
Implication des acteurs intéressés	MS	TS
Planification financière	MS	S
Supervision par le CSE	S	TS
Notation générale	MS	MS



Merci pour votre attention.



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Projet Fond d'Adaptation: Adaptation à l'érosion côtière à Saly, Rufisque et Joal.

EVALUATION FINALE
Leçons et perspectives

12 Juin 2015
Dakar



Dr L. Palazy



Structure de la réunion

	Sujet	Intervenant
1	Résultats de l'évaluation	L. Palazy
2	Analyse des ouvrages	M. Li
3	Leçons et perspectives	L. Palazy



Leçons et perspectives

- Favoriser la collaboration entre **institutions gouvernementales et non-gouvernementales** dans la mise en œuvre;
- Engager les **bénéficiaires** dès la conception des activités et tout au long du projet;
- S'assurer de la **capacité d'entretien** des infrastructures en amont;
- Augmenter l'implication des **structures centralisées** pour budgétisation et partage de connaissances;
- Engager les communes et faire signer **engagement d'endorsement** par les mairies pour le maintien avant le début de la mise en œuvre;
- Envisager la mise en place de système de **contribution financière** des bénéficiaires;



Leçons et perspectives

- Développer des **indicateurs et cibles** spécifiques et quantitatifs, déterminer précisément leur niveau de base et les mesurer régulièrement;
- Faire des **EIE** plus poussées et appliquer le plan de suivi;
- Combiner les **infrastructures en dur et naturelles**;
- Améliorer le **système de suivi** du niveau de la mer, marées et houles;
- Prendre plus en compte les **scénarios climatiques et leurs effets**; et
- Suivre l'**efficacité** des infrastructures sur le **long terme** y compris avec des projets de **recherche**.

