

Funding Proposal

FP003: Increasing Resilience of Ecosystems and Communities through Restoration of the Productive Bases of Salinized Lands

Senegal | Centre de Suivi Ecologique (CSE) | Decision B.11/11

15 October 2015



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Funding Proposal

Version 1.0

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.



Contents

Section A	PROJECT / PROGRAMME SUMMARY
Section B	FINANCING / COST INFORMATION
Section C	DETAILED PROJECT / PROGRAMME DESCRIPTION
Section D	RATIONALE FOR GCF INVOLVEMENT
Section E	EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA
Section F	APPRAISAL SUMMARY
Section G	RISK ASSESSMENT AND MANAGEMENT
Section H	RESULTS MONITORING AND REPORTING
Section I	ANNEXES

Note to accredited entities on the use of the funding proposal template

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"[FP]-[Agency Short Name]-[Date]-[Serial Number]"

supply chain management, relocation of manufacturing facilities and warehouses, etc.)

- x Health and well-being, and food and water security
(E.g. climate-resilient crops, efficient irrigation systems, etc.)
- x Infrastructure and built environment
(E.g. sea walls, resilient road networks, etc.)
- x Ecosystem and ecosystem services
(E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

Please provide a brief description of the proposed project/programme, including the objectives and primary measurable benefits (see investment criteria in section E). The detailed description can be elaborated in section C.

For more than four decades, Senegal, as an underdeveloped Sahelian country has been facing climate change, with one of its most striking events being land salinization due to its magnitude and its ecological, social and economic consequences. The main causes of land salinization related to climate factors include:

- (a) Low rainfall due to persistent drought causing reduced land drainage by fresh water;
- (b) Low infiltration of fresh water leading to salt water intrusion;
- (c) Rising sea level causing saltwater encroachment on land; and
- (d) The combined effect of reduced rainfall and increasing temperatures accelerating evaporation which contributes to the rise of salt water by capillary action.

Land salinization and the contamination of water tables that result from it have significantly increased the vulnerability of ecosystems and communities, leading particularly to: reduced arable lands, lower soil fertility, decline in yields and productions, food insecurity, unemployment, rural exodus, etc. The country has taken many initiatives at political, institutional, legislative, social and economic levels leading to the development of policies, strategies and laws as well as the establishment of projects and programmes (baseline). However, these actions remain limited considering the extent of the phenomenon and the persistence of several constraints and barriers, including: (a) a poorly defined political and institutional framework (legislative, regulatory, organizational and financial) for addressing the issue of climate change in planning and programming; (b) appropriate technical and technological tools are poorly disseminated and applied; and (c) a deterioration in the living conditions of local communities and low resilience capacities of stakeholders.

The project is therefore a response, in the short and long terms, to the impacts of climate change specifically on the issue of land salinization in the area of intervention which is a delta area and estuaries. To address the problem, the project envisions through the provision of information and training, and the raising of awareness, to: (a) improve knowledge on the phenomenon; (b) promote the adoption and dissemination of appropriate technologies; and (c) encourage the broad participation of beneficiaries (populations and local authorities). It aims to: (a) improve knowledge on salinized lands; (b) develop adequate responses through the adoption and dissemination of appropriate technologies; and (c) improve the living conditions of the worst-hit local communities.

Hence there is a need to develop a more integrated and participatory approach involving all stakeholders in an enduring partnership approach. This approach focuses on the principle of additionally, which implies that the project builds on the gains of both national and local stakeholders to help to overcome the remaining barriers in order to ensure the sustainability of project activities. It is against this backdrop that a co-financing system will be developed to establish a genuine co-management of the project activities.

The expected results include: (a) strengthened individual, institutional and systemic resilience capacities of the various stakeholders (State, local communities, technical structures, non-governmental organizations (NGOs), the private sector, local communities and their organizations, vulnerable groups women and youth, etc.); (d) reduced salinity of

agricultural, pastoral and forest lands, which form the productive basis of the local and national economies; and (c) enhanced resilience of communities to the impacts of salinization on their livelihoods. This three-pronged approach is designed to address the institutional, biophysical and socioeconomic drivers of vulnerability to climate change and the subsequent adaptation needs, as identified by the Intergovernmental Panel on Climate Change (IPCC).¹ Institutional and community support for desalinization measures are essential for ensuring that these enabling environments are in place to support the long-term maintenance and operations of the desalinization measures. This integrated institutional, biophysical and socioeconomic approach to addressing the problem represents an innovative aspect of the proposal and builds on lessons learned from the past.

A.3. Project Milestone

Expected approval from accredited entity's Board (if applicable)	Not Applicable
Expected financial close (if applicable)	Date: 01/06/2020
Estimated implementation start and end date	Start: <u>01/02/2016</u> End: <u>01/02/2020</u>
Project lifespan	4 years 0 months, plus 3 years post project monitoring

¹ Huq S, Anokhin YA, Carmin J, Goudou D, Lansigan FP, Osman-Elasha B and Villamizar A. 2014. Adaptation needs and options. *In*: CB Field, VR Barros, DJ Dokken, KJ Mach, MD Mastrandrea, TE Bilir, M Chatterjee, KL Ebi, YO Estrada, RC Genova, B Girma, ES Kissel, AN Levy, S MacCracken, PR Mastrandrea, and LL White (eds.). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom and New York, NY: Cambridge University Press, pp. 833–868.

B.1. Description of Financial Elements of the Project / Programme

Please provide:

- an integrated financial model in Section I (Annexes) that includes a projection covering the period from financial closing through final maturity of the proposed GCF financing with detailed assumptions and rationale; and a sensitivity analysis of critical elements of the project/programme
- a description of how the choice of financial instrument(s) will overcome barriers and achieve project objectives, and leverage public and/or private finance
- a breakdown of cost estimates analysed by sub-component in local and foreign currency and a currency hedging mechanism:

For example, under the component of drilling activity for a geothermal exploration project, sub-components would include civil engineering works, drilling services, drilling equipment and inspection test.

Component	Amount	Currency of disbursement	Amount	Local currency
Component 1	0.576100	million USD (\$)	288.05	million XOF
Component 2	3.707900	million USD (\$)	2008,376	million XOF
Component 3	2.671000	million USD (\$)	1663,676	million XOF
Execution cost	1.205260	million USD (\$)		
Total	8.160260	million USD (\$)	3960,102	million XOF

Indicative disbursement schedule

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Component 1	196 685	176 695	101 360	101 360	0	0	0
Component 2.	1 019 875	1 112 775	1 112 775	462 475	0	0	0
Component 3.	752 750	837 750	837 750	242 750	0	0	0
Implementation of the environmental and social management plan	50 000	50 000	80 000	70 000	0	0	0
Monitoring of the environmental and social management plan	1 250	1 250	1 250	1 250	0	0	0
Communication	31 000	21 000	26 000	26 000	0	0	0
Audits	20 000	20 000	20 000	20 000	0	0	0
Evaluations	0	10 000	0	10 000	0	0	0
Exit strategy	0	0	30 000	10 000	0	0	0
Project management	183 831	198 832	196 900	76 697	0	0	0
Post-project monitoring and evaluation	0	0	0	0	17 000	17 000	16 000
Total	2 255 391	2 428 302	2 406 035	1 020 532	17 000	17 000	16 000

The provision of timely budget will be a factor and will enable the achievement of project objectives.

We believe we can negotiate a quarterly investment rate of 1.5 per cent.

We believe that a flexibility rate of 20 per cent of the overall budget will be necessary during project implementation.

B.2. Project Financing Information							
	Financial Instrument	Amount	Currency	Tenor	Pricing		
(a) Total project financing	(a) = (b) + (c)	8.160260	<u>million USD (\$)</u>				
(b) Requested GCF amount	(i) Senior Loans	.....	<u>Options</u>	() years	() %		
	(ii) Subordinated Loans	.....	<u>Options</u>	() years	() %		
	(iii) Equity	.....	<u>Options</u>		() % IRR		
	(iv) Guarantees	.....	<u>Options</u>				
(b) Requested GCF amount	(v) Reimbursable grants *	.....	<u>Options</u>				
	(vi) Grants *	7.614260	<u>million USD (\$)</u>				
* Please provide economic and financial justification in <u>section F.1</u> for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in <u>section E</u> .							
	Total requested (i+ii+iii+iv+v+vi)	7 614260	<u>million USD (\$)</u>				
(c) Co-financing	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
	<u>Grant</u>	.....	<u>million USD (\$)</u>		(4) years	() %	<u>senior</u>
	<u>Grant</u>	...	<u>million USD (\$)</u>	.....INP.....	(4) years	() %	<u>junior</u>
	<u>Optio ns</u>	0.546.....	<u>million USD (\$)</u>	.....	( 4) years	() % IRR	<u>Options</u>
	<u>Optio ns</u>	.....	<u>Options</u>	.....			<u>Options</u>
	<u>Optio ns</u>	...	<u>Options</u>				
	Lead financing institution: GCF						
* Please provide a confirmation letter or a letter of commitment in <u>section I</u> issued by the co-financing institution.							
B.3. Fee Arrangement							
Fee arrangement for the proposed project/programme is to be aligned with the GCF Board's decision on fees, which is expected to be taken at the 11 th meeting of the Board							
The accredited entity management fees are not included in the budget above							
B.4. Financial Market Overview (if applicable)							
N/A							

C.1. Strategic Context

Please describe relevant national, sub-national, regional, global, political, and/or economic factors that help to contextualize the proposal, including existing national and sector policies and strategies.

I CONTEXT

1.1. The physical context :

Senegal is located between latitude 12°8' and 16°41' north and longitude 11°21' and 17°32' west. It covers an area of 196,722 km² and is divided into 14 administrative regions. Its population is estimated at 12,873,601 with an annual growth rate of 2.5 per cent (ANSD: RGPHE 2013). The Senegalese climate is of tropical semi-arid type, with two distinct seasons: dry from October to May and rainy from June to September. It is characterized by high inter-annual rainfall variability due to the distribution and duration of the rainy season. It is moreover submitted to a strong maritime influence with over 700 km of coastline. Like other Sahelian countries, Senegal is marked by a strong degradation of soil resources, vegetation and a biodiversity erosion across the country's ecogeographic areas; rising temperatures, variation in seasonal cycles, and low rainfall among other things that all impact on production systems. However, the salinization of waters and soils which form the country's productive basis remains one of the major concerns because of its magnitude and impacts at the ecological, social and economic levels for local communities and the country as a whole. The observation series for 1901–1930, 1931–1960, 1961–1990 and 1971–2007 suggest that, over the last decades, rainfall has experienced a significant drop with a shift of isohyets from north to south and a very high spatio-temporal variability. Isohyet 400mm that was over the Louga-Podor axis during 1931–1960 was on the Thies-Matam axis between 1971 and 2007. The country comprises six characteristic ecogeographic zones each with high vulnerability and manifestations of the impacts of climate change (figure 1).

The Groundnut Basin zone and more specifically the districts of Fatick and Foundiougne, where this project will be implemented, are particularly marked by salinization, which justifies project implementation in this area.

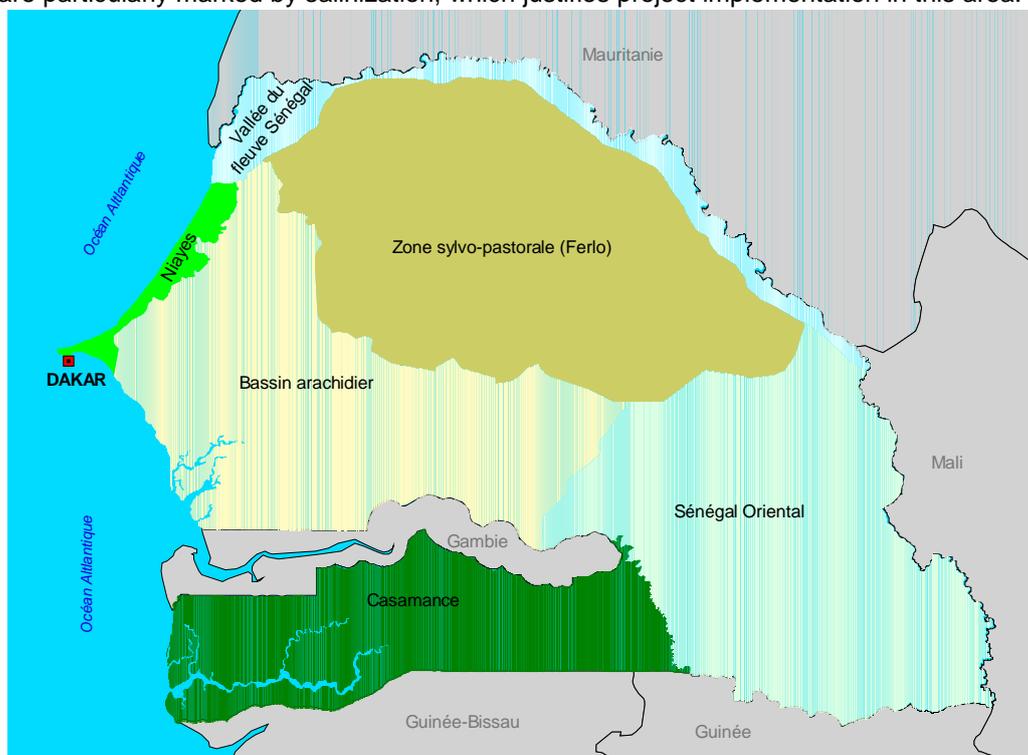


Figure 1: Ecogeographical zones of Senegal (CSE 2004)

1.2. The political and institutional context:

Due to the multidimensional and multisectoral nature of the fight against climate change in general and the sustainable management of salinized lands in particular, which involves many State institutions, the project is aligned with several national and sectoral policies and strategies :

At the international level

The **United Nations Framework Convention on Climate Change (UNFCCC)** and the Kyoto Protocol ratified by Senegal in 1994 and 2001, respectively. The National Climate Change Committee (COMNACC) was set up upon ratification and Regional Climate Change Committees (COMRECCs) were established in 2010 to support, advise and follow up on the effective implementation of the goals of the Convention.

At the national level

- The **Plan Sénégal Emergent (Emerging Senegal Plan (PSE))** is the country's economic and social planning reference document in the medium and long terms, up to 2035. The project is fully consistent with component 2 of the 2014–2018 PSE titled "Human capital, social protection and sustainable development" which focuses on the need to "incorporate sustainable development principles in national policies and reverse the trend noted against the loss of environmental resources" by "ensuring a balance between the development of productive activities and environmental management".

Adaptation to climate change is therefore a major challenge to PSE which reinforces the strategies of the Environmental and Natural Resource Sector Policy Statement. Enduring solutions must be found to enable populations and institutional stakeholders to develop a culture of climate change prevention and adaptation characterized by the occurrence of events such as flooding, recurrent droughts, land salinization, coastal erosion and rising temperatures.

- ⇒ The **Environment and Natural Resource Sector Policy Statement (LPSEERN)**: its strategic objectives are : (a) to improve the knowledge base on the environment and natural resources (ENR); (b) to reverse the current degradation trend of the ENR; and (c) to increase the participation of populations, local communities and the private sector in the concerted management of the ENR. The action of LPSEERN hinges on various instruments such as: (a) the National Action Plan to Combat Desertification; (b) the Strategy and National Action Plan for Biodiversity Conservation; (c) the National Wetlands Management Policy, and (d) the strategy for the Implementation of the UNFCCC and its national action plan for adaptation (NAPA) among others.
- ⇒ The **National Strategy for Sustainable Management of Run-off and Fight against Land Salinization** which defines the direction in combating the phenomenon.

Due to the impact of changes on the country's various economic and social sectors, other policies and strategies are also involved such as:

- ⇒ The **Agricultural Development Policy Paper** mainly flagship programmes focusing on food security – improved exports such as: the Programme to Accelerate the Pace of the Senegalese Agriculture, the National Rice Self-sufficiency Programme; and the Programme for the Economic Development of the Niayes;
- ⇒ The **Livestock Development Policy Statement** and the **National Livestock Development Plan**: one main goal being the securitization of livestock for increased productivity;
- ⇒ The **Fisheries Development Policy Statement**, the **Action Plan for the Development of Fisheries** and the **Operational Plan for the Development of Aquaculture**: lay emphasis on "a sustainable management and restoration of fishery resources";
- ⇒ The **Agro-sylvo-pastoral Outline Law (Law N° 2004-16 of 04 June 2004)**: seeks to promote better land

development in the long term through securing land for small-scale producers and the development of private agribusiness; and

- ⇒ **Water policy:** focuses on the production and distribution of deep and surface water resources to cater both for clean water and production needs.

Legislation on the environment and natural resources:

Various texts and laws organize land management in Senegal, including:

- ⇒ **Land legislation (Law N° 64-46 of 17 June 1964);**
- ⇒ **Legislation on the environment and natural resources:** includes various codes on forest land, the environment and hunting as well as wildlife, pastoral and water protection, etc.; and
- ⇒ **Phase 3 of decentralization:** envisions organizing Senegal into “viable, competitive territories capable of promoting sustainable development by 2022”. It beefs up the capacities of the commune through greater regulatory, financial and managerial autonomy so as to develop its territory.

1.3. Socioeconomic context

Senegal is a Sahelian country predominantly agricultural, highly dependent on an unpredictable climate and agroecological conditions making it one the least developed countries.

According to the 2013 National Strategy for Economic and Social Development review, the average growth rate of Senegal’s GDP was estimated at 3.9 per cent, corresponding to only 1.3 per cent above the demographic growth rate (2.6 per cent). Factors behind this counter-performance include the low performance of the primary sector due to a strong deterioration in living conditions (of the lands) and the low performance of the production support mechanisms. This results in a deterioration in the populations’ living conditions with a 57.1 per cent rural poverty increase, against 26.1 per cent in its capital city, Dakar, and 41.2 per cent in other cities (see: context report on PSE (May 2014)).

PSE is the new economic and social planning document defined by the Senegalese political authorities as a “reference for the medium and long term economic and social policy” based on the vision of an emerging Senegal by 2035. In this regard, the PSE is the key project entry point and source so as to check its contribution to food security.

These last two documents strongly support activities to reduce rural–urban migration by promoting and supporting, among others, the development of agriculture activities in rural areas, with the ultimate goal of Senegal becoming self-sufficient in cereals, with the particular focus of becoming self-sufficient in rice by 2017.

C.2. Project / Programme Objective against Baseline

Please describe the baseline scenario (i.e. emissions baseline, climate vulnerability baseline, key barriers, challenges and/or policies) and the impact that the project/programme will aim to achieve in improving the baseline scenario.

The high level objective of the proposed project is to increase the long-term resilience of the local population to the impacts of climate change. The project will focus on addressing the particularly acute problem of the increased salinization of agricultural lands in this region the population of which is highly dependent on agriculture for its livelihood. Increased salinization, exacerbated by climate change, is threatening the development of the region and its people.

There are three main baseline conditions which act as barriers to this objective and which the project seeks to address. These are organized using the aforementioned IPCC adaptation needs: biophysical, institutional and social barriers, and adaptation needs.

i. Biophysical and environmental baseline conditions

The project operates in the ecogeographic zone of the Groundnut Basin (*Bassin arachidier*, **figure 1**) with a high density of population comprising mainly agropastoralists growing the country's major food and cash crops such as millet and groundnut the development of which is strongly disrupted by water and soil salinity. The focus is placed on the agro-sylvo-pastoral production sites in order to enhance the resilience of ecosystems and ensure food security of communities and fight household poverty.

Land salinization in the project area is caused by natural (e.g. climate) and/or anthropogenic (e.g. human) activities :

- Natural causes: (a) seawater intrusions; (b) capillary action from drought and a declining rainfall; and (c) wind transport of salt loams;
- Anthropogenic causes: (a) bad farming practices such as the irrational use of chemical inputs; (b) the poor quality of development; (c) overuse of groundwater fostering salt water intrusion; (d) the lack of a drainage system; and (e) the inappropriate use of brackish water for irrigation.

2.1. Site location (figure 2): The selected project sites are areas (in red) with high agricultural potentials in the districts of Fatick (Diouroup and Loul Sessène) and Foundiougne (Djilor, Toubacouta, Keur Samba Guèye and Diossong).

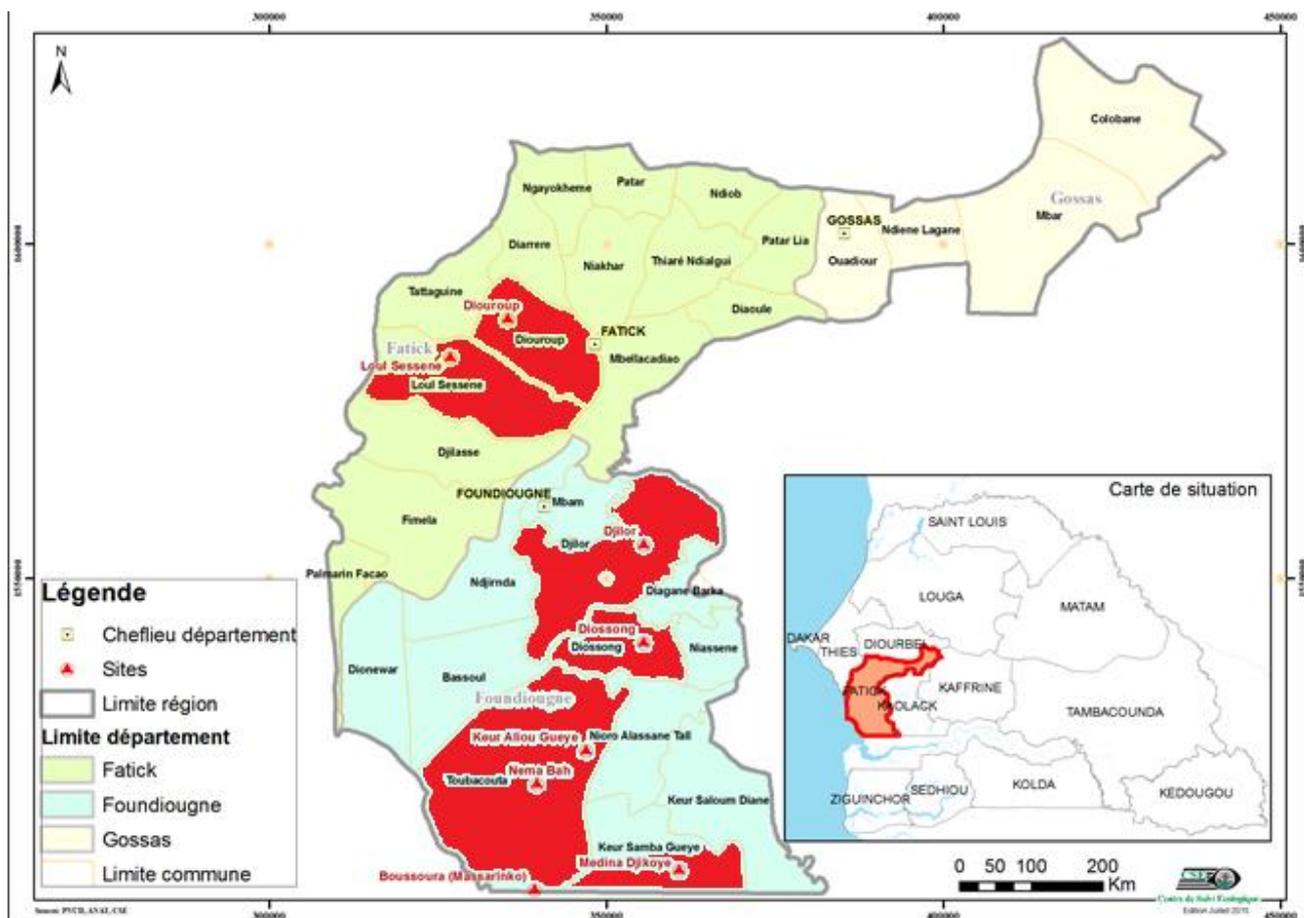


Figure 2: Project area location

Rationale: These sites are located in the Sine Saloum Region, one of the regions of the country with the largest areas of salinized land (see 1991 data in table 1). These salinized areas have extended further since then. A more recent study conducted in this region (in 2004), evaluated the salinized lands unsuitable for agriculture at 265,500 ha or 33.6 per cent of the total land area; they are located mainly in the districts of Fatick and Foundiougne and are considered limiting factors for agriculture and livestock activities. Primarily, land use in this area is for cash crops such as groundnut, vegetables, etc. Local farmers have little scope for income diversification when crops fail. Due to the climate change described above and poor agricultural practices, the land area and degree of salinization is increasing.

As a result, several attempts to recover salinized lands were made by various stakeholders (State structures, NGOs, local populations, etc.) through programmes, projects or farmers' own initiatives. These include the Project to Improve Local Small-scale Irrigation (PAPIL) that built anti-salt dikes and run-off impoundments with convincing yet limited results.

Table 1: Size of land affected by salinization in Senegal

Zones	Size (ha)	Soil types
Petite côte (Small coast)	< 100	Acid sulphate soils and salty soils
Sine Saloum Region (230, 000 ha)	River-continental area	Salty soils, acid sulphate soils
	Estuarine area	Acid sulphate soils
River Gambia Basin	143 000	Acid sulphate soils and salty soils

Source : SADIO S. 1991, Pédogénèse et potentialités forestières des sols sulfatés acides et salés du Sine Saloum (Sénégal). ORSTOM Etudes et thèses - 1991 - 270 p.

Climate variability and man-induced activities have caused increased salinization of land in Senegal, particularly within the project intervention area due to its coastal location, intensive farming and high population density. In the country as a whole, increased salinized lands have reduced arable lands by about 45 per cent along with a decline in yields and production, and the pollution of freshwater aquifers causing food insecurity and lowering population incomes. This leads to a growth deficit for a country such as Senegal where the economy is primarily led by agriculture.

Faced with a nationwide salinization issue, several measures have been taken by the State, many dating from before the country's independence in 1960, by technical and financial partners, local communities and NGOs. These included the construction of protection dikes against saltwater intrusion in the region of Fatick (the project area, in the centre of Senegal) and Casamance (in the southwest of Senegal).

However, these large-scale infrastructural interventions have proven ineffective over time and their maintenance costs, have been high, while their buy-in by local populations have been weak. More recent experience promotes the use of small-scale community decided infrastructure. This assures buy-in from the local populations which are more likely to use and maintain interventions which it has taken a role in developing, deciding upon and benefitting from. This is the approach that this project proposes.

Two major types of activities are carried out to fight land salinization. They include mechanical and biological actions.

- ❖ **Mechanical actions** are under way mainly in Casamance and Sine-Saloum with the construction of anti-salt dikes and embankments particularly in the valleys, especially through the PAPIL and Projet d'Appui au Développement Agricole et à l'Entreprenariat Rural (Project to Support Agricultural Development and Rural Entrepreneurship) (PADAER) projects, to curb seawater intrusion. Other additional technologies have also been developed such as ridge harvesting, rack valves to regulate water flow with support from research (Institut Sénégalais de Recherches Agricoles² (ISRA), Institut de Recherche pour le Développement³ (IRD) or Centre de coopération internationale en recherche

² Senegalese Agricultural Research Institute

³ French Research for Development Institute

agronomique pour le développement⁴ (CIRAD) as well as traditional good practices by the Diola populations which have a long tradition of rice field desalination; and

- ❖ **Biological actions** particularly relate to the use of halophilic tree species such as *Tamarix sp.*, *Melaleuca* for reforestation in particular of salt flats in the Sine-Saloum, allowing for the recovery of some lands. In agriculture, it should be noted that following the immersion then drainage of soil, phosphogypsum is spread for irrigated crops with the support of SENCHIM (private company specializing in agriculture equipment and fertilizer).

These efforts helped to protect several thousands of hectares. However, despite all these efforts at the national and local levels, the issue remains a reality and is more acute due to climate variability and change.

Technical and technological barriers include:

- (a) Inadequate technical and technological knowledge (causes, level of salinity, extent of area affected by salinization);
- (b) The high costs of necessary investments (micro-dams, protection embankments, DRS/CES⁵ (soil protection and restoration) mechanisms;
- (c) The limited technical and technological skills of most stakeholders;
- (d) Scarce resources for supervision;
- (e) Land status (tenure); and
- (f) Low capacity of local producers to develop local solutions due to the magnitude and complexity of the phenomena of salinization.

ii. Institutional baseline: measures to combat land salinization and their limitations and gaps

Senegal has developed several land management policies and strategies in key sectors like the environment and natural resource management, agriculture, livestock, etc. Some are presented below.

Several initiatives have already been taken to protect against saltwater intrusion into lands mainly through the construction of anti-salt dikes and development of valleys. These initiatives are pursued through various ongoing projects such as:

- ❖ The **PAPIL (2006–2011, 2011–2015)**: financed by the African Development Bank – up to 16.28 million units of activity; the Islamic Development Bank – 14.47 million United States dollars (USD) – is highly active in the food security area with the construction of waterworks for water control and the fight against land salinization;
- ❖ **Le projet de Bassins de Rétention et de Valorisation de forages** (the **Project for Retention Basins and Boreholes Development, BARVAFOR**), 2001–2016 – USD 12 million financed up to 95 per cent by Belgium) is active in the Groundnut Basin for the construction of hydro agricultural developments, including anti-salt dikes to protect and recover salinized lands;
- ❖ The **Senegal-Japan capacity-building project for the control of land degradation and promotion of their development in degraded soils 2011–2016** –USD 5 million from Japan in the districts of Fatick, Foundiougne, Kaolack and Niolor;
- ❖ The **Programme to Promote Renewable Energies of Rural Electrification and Sustainable Supply in Domestic Fuels** which also operates in the area with the development and reforestation of forests in Djilor and Vélor; and
- ❖ The **EcoVillages Programme** also operates in the district of Foundiougne on aspects related to reforestation, wind energy and improved stoves.

⁴ International Crop Research Institute for Semi –Arid Tropics

⁵ Défense et Restauration des Sols / Conservation des Eaux et Sols

These projects have benefited from the technical and technological support of national research institutions specializing in land management in general and salinized lands in particular, such as:

- ❖ **INP**, which develops models for combating land salinization using local materials in the construction of dikes, and phosphogypsum and peanut shells to facilitate salt removal and improve the soil structure. It also supervises farmers in the areas of information dissemination and training on good preventive and palliative practices in the fight against land salinization;
- ❖ **ISRA** develops research on the agro-sylvo-pastoral restoration and valorization of lands degraded by salinization. In addition to the construction of anti-salt infrastructures, the introduction of exotic salt-tolerant species (*Melaleuca*, *Tamarix aphylla*, etc.) and the selection of salt-tolerant cereal and fodder varieties (rice, sorghum) should be noted;
- ❖ **CSE** performs a regular monitoring of parameters related to the evolution of natural resources in the areas of forestry, livestock and agriculture using modern techniques such as satellite data;
- ❖ **Direction de la Gestion et de la Planification des Ressources en Eau** (Directorate on the Management and Planning of Water Resources) monitors more than 147 power plants to map and monitor the country's water resources with the development of a Geographic Information System; and
- ❖ **Agence nationale de la météorologie du Sénégal** (National Meteorology Agency (ANACIM)) has a network of observation stations across the country for agro-hydro-meteorological data collection, processing and disseminating information to various temporal scales (daily, weekly, monthly or decennial) for better meteorological and climate monitoring in the areas of forestry, water, environment, livestock, soils, etc.

Political, institutional and organizational barriers include:

- (a) Lack of synergy in stakeholders' interventions reducing the effectiveness of activities and efficiency of resources; (b) Limited involvement of local communities;
- (c) Inadequate organization and poor producers' resources to maintain the anti-salt structures;
- (d) Inadequate or non-existent specific legislation on salinized lands which often have ambiguous status; and
- (e) Lack of financial resources to address the phenomenon which requires heavy investment over a long period.

iii. Socioeconomic baseline: the resilience and coping capacities of local populations to salinization and climate change

The loss of land and productivity in this coastal area is contributing to the increased vulnerability of the population by reducing their primary income source, poor health due to lack of water quality and malnutrition. This increased rural poverty is contributing to rural-urban migration, impacting the country as a whole. The project seeks to reduce this poverty cycle by addressing salinization and, in addition, promoting income generation and diversification for communities to protect them from increasingly harsh climate conditions. As climate change is expected to continue in the future, populations in the area require support to reduce their exposure in this region highly dependent on agriculture.

Socioeconomic constraints relate to:

- (a) Reduced arable lands with the abandonment of salinized lands resulting in arable land redistribution to the detriment of vulnerable groups, that is, women and youth whose access to the main production factors or land has become more difficult and uncertain;
- (b) Decline in farm yields causing decreased production, a lower food balance and food insecurity;
- (c) Drop in revenues due to reduction in the cash production share; and
- (d) Increased unemployment among young women and men leading to a rural exodus (job loss) and reduction of the

local workforce.

Please describe the main goal and anticipated Outputs of the project/programme, with reference to the baseline scenario.

Goal and long term anticipated outputs

Project objective:

The objective pursued by the project is, therefore, to contribute to overcoming these barriers and constraints by bringing added value to actions already taking place and applying the most recent best practices, including small-scale interventions, engaging communities and creating incentives through improving livelihoods by participation by local populations in the project interventions. The technological barriers and institutional barriers to achieving a paradigm shift will be addressed mainly through two means:

- capacity development: the salty land mapping will provide relevant decision making tool for decision makers at all levels. In addition, capacity building activities, introduction of new adaptation strategies and the strengthening of organizational capacities will also contribute to a paradigm shift in the way land salinization is tackled;
- innovation: the project strategy put emphasis on simple and affordable technologies easy to be replicated and maintained by local actors themselves.

The solution proposed is to ensure an effective prevention of the risks of land salinization due to climate change and to develop appropriate mechanisms to reduce and manage salinized lands affected by salinization. This will restore and improve their fertility in a bid to enhance food security as well as economic and financial profitability. Such a goal must be based on capacity-building for the various stakeholders especially the technical services, local collectives, communities, the private sector, NGOs, etc., in order to achieve the following results: (a) improved knowledge of the causes and consequences of land salinization processes and better monitoring and evaluation of the level and scope of the phenomenon; (b) large-scale adoption of appropriate and effective techniques and technologies to prevent the risks of salinization and restore already polluted lands; (c) promotion of measures that increase food security, improve community incomes (and livelihood diversification) and promote local private investment initiatives (job and income generation); and (d) increased resilience of vulnerable groups (women and youth) to climate shocks and desalinization through the provision of restored lands and the technical and financial support of the project to conduct production activities ('green' jobs and incomes) enabling them to diversify their income so it is less vulnerable to the effects of climate shocks to agriculture.

From this perspective, the project will achieve these results through the following three components: 1) **Strengthening individual and institutional capacities for improved land management to reduce salinization;** 2) **Improving productivity of agricultural, pastoral and forest lands;** and 3) **Enhancing the resilience of grass-roots communities through the socioeconomic valorization of salinized lands.**

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

Component 1 is designed to strengthen the institutional and strategic framework through mainstreaming climate change in the main development plan, the development of coordination mechanisms and the building of a sound knowledge base. It includes a set of measures aiming to integrating climate change into the main local planning documents and to provide local actors with appropriate decision making tools. Poor coordination and lack of accurate and timely information on land conditions and its relation with climate change are among the main impediments to local development in this area. Therefore, the activities planned under Component 1 will help address these barriers and create an enabling environment for a successful implementation of Component 2 and Component 3. The integration of climate change into local planning documents will facilitate obtaining the necessary deliberations from the local authorities for the implementation of the activities under components 2 and 3, It will also help to sustain these activities beyond the project lifetime.

Building on Component 1, **Component 2** will allow to carrying out activities to enhance the natural capital. Activities under Component 2 are key to controlling salinization and regenerating the vegetation cover. The project resources under Component 2 will also allow to protecting land from erosion and harvesting rain water which in turn will make it easy to developing resilience activities as planned under Component 3.

Component 3 will build on the enabling environment created through Component 1 and 2 to develop activities that will strengthen the resilience of grassroots communities. It includes the provisions of inputs, but above all capacity building and organizational development support in order to promote income generating activities, with a particular focus on women specific activities. It is expected that the project resources under Component 3 will secure the sustainable livelihoods of local communities.

The interlinkages between these 3 components will be reflected in the institutional arrangement for the implementation of this project. From the elaboration of the working plans to the implementation of the activities, synergies will be sought and established between implementing partners to ensure a greater consistency in the overall project implementation. The project strategy is to take an integrated approach linking up the 3 components.

The project will intervene in six project sites, selected by local communities (see output 1 for details). These sites were selected based on the following criteria, among others: environmental vulnerability, socioeconomic vulnerability and the degree of poverty, benefits and leadership potential for women, benefits for the greatest number of vulnerable people, technical feasibility, and a lack of legal or regulatory constraints.

C.3. Project / Programme Description

Describe the main activities and the planned measures of the project/programme according to each of its components.

The project will be implemented through three components

Component 1. Strengthened individual and institutional capacities for improved land management to reduce salinization

❖ Baseline

Climate change involves several stakeholders whose interventions are often poorly articulated reducing their effectiveness and impact in terms of improving the restoration rates of salinized land areas and increasing land productivity with a view to reduce food insecurity. The National Committee on Climate Change (COMNACC) is already in place, yet it does not have the resources to ensure the effective coordination of interventions.

This situation can be explained by the absence of a common intervention base due to a lack of reliable information and knowledge about salinized lands allowing the development of appropriate technical and technological packages for an effective management of these soils.

Indeed, the causes of soil degradation mainly related to the climate are still poorly understood, just like the affected areas, the extent of the phenomenon and its impact on production systems, in the absence of reliable information on bad practices and climate change impacts.

Finally, the actors are insufficiently trained on strategies through which to manage salinized lands and are poorly organized to address the phenomenon the magnitude and impacts of which require a coordinated effort.

❖ Adaptive alternatives

Through Component 1, the “Increasing the resilience of ecosystems and communities through the restoration of the productive bases of salinized lands” project resources will be used to strengthen local governments and other local institutions. This will be done by supporting district councils and communes to review district and local development plans, and then to make changes to them in order to integrate climate change in their respective intervention areas. The purpose is to define guidelines for the sustainable land development and management that will be reflected in the

Communal Development Plan, the Communal Investment Plan, and the Land Use and Land-Use Change Plans.

Furthermore, salty land mapping will provide an important decision making tool to local government units, as well as to local extensions. Capacity building activities will also target local institutions.

The effectiveness of salinized land management will be improved by the development of an information and knowledge management system for the supervision and monitoring of the evolution, as well as the continuous evaluation, of the productive capacities of salinized lands. This will contribute to the understanding of their evolution under the influence of anthropogenic activities and climate change and their impacts on agro-sylvo-pastoral and fishery productions; for improved and effective decision-making.

Output 1. The climate change institutional and knowledge framework is strengthened

Actors involved in climate management have new mechanisms for improving governance in sustainable land management through the following activities:

- Integrating climate change and natural resource management into existing local conventions

Local conventions and codes will be updated by integrating a natural resource dimension, including information regarding soils and soils vulnerable to salinization currently and in the future. This represents an important gap in current planning practices as this land dimension is rarely addressed in current planning, regardless of the fact that it determines the various appropriate forms of land use. The project will support the review and integration of land management, salinization and climate change risks into at least 30 local conventions.

This will be done by supporting district councils and communes to review district and local development plans, and then to make changes to them in order to integrate climate change in their respective intervention areas. The purpose is to define guidelines for the sustainable land development and management that will be reflected in the Communal Development Plan, the Communal Investment Plan, and the Land Use and Land-Use Change Plans.

- Strengthening local climate change consultation committees to coordinate adaptation efforts

Under Act 3 (Phase 3) of the government's Decentralization Plan, special attention is given to reinforcing the powers of communes in the natural resource management of the environment and natural resources. In particular, communes have increased mandates to conduct arbitration so as to decide on land use depending on their agro-ecological skills and their socioeconomic purposes). This activity strengthens the technical, physical, financial and organizational capacities of existing local consultation committees to address climate change in their deliberations for the districts of Fatick and Foundiougne. These committees will also be responsible for conducting widespread community consultations, including separate consultations with women's groups, to identify the six project intervention sites. At least 25 per cent of the composition of these committees will be women.

Output 2. The knowledge base on salinized lands is improved

Local decision-making on land-use management to reduce salinization will be supported by an increased knowledge base. A preventative approach, controlling the causes, effects, and magnitude of salinization in the project area will be encouraged in order to preserve the productivity of sites not yet affected, and restore affected areas. To do this, the use of the following knowledge tools is planned:

- Creating maps of salinized lands for specialized users

A dynamic map showing the extent and size of salinized lands within the project intervention sites will help to better estimate the affected areas; measure the gradient and determine areas at risk. It could be based on the inventory and mapping template for salinized lands already developed by PAPIL in collaboration with INP and the CSE for the purpose of rolling out across the country. Based on this, land-use suitability maps will also be developed to determine the levels of salinity and appropriate treatment modes to be assigned to each category of salty soil in order to improve its productivity. This will be supported by a real-time georeferenced database (GIS) that will be created, and shared with all stakeholders through a website, news bulletins and policy briefs. .

The project will coordinate and collaborate with ANACIM (National Agency of Meteorology) and the Groupe de Travail Pluridisciplinaire (Multidisciplinary Working Group), composed of several governmental agencies and some international organizations or projects that meet every 10 days during the agricultural season to provide a bulletin that includes summaries on rainfall, water supplies, the state and stage of crops, pastures and livestock, etc., to contribute to generating climate information about the prevention and adaptive measures on salinized lands.

Climate information will mainly focus on:

- (a) Monitoring of piezometric data related to saltwater intrusion against rainfall evolution;
- (b) Monitoring of oceanographic data on the levels of oceans and swells, and the risks of seawater intrusion along the coastlines and shorelines; and
- (c) Rainfall monitoring to prevent the risks of low leaching of saline lands (low rainfall) and destruction of anti-salt dikes with flooding and torrents (high rainfall), etc.

- Disseminating climate information about salinized lands to communities and raising awareness

A local system for disseminating climate information on salinized lands will be set up in the project intervention communes with the help of local media, including community radio stations, umbrella organizations and local groups.

Information on rainfall will be provided on a frequency ranging from a 10-day period to a 30-day period and from the season (six months), in relation to the data on the agricultural season monitoring. Regarding the information on the levels of swells and their impact on sea encroachment, data will be provided annually through records from the Dakar tide gauge. This information will feed into the technical and technological packages of the supervision and research structures and allow for an adaptation of inputs (mainly seeds), farming techniques and types of crops to the salinity level of lands in order to ensure the resilience of production systems. It will also be disseminated on a larger scale through weather bulletins, the media and other communications channels.

Component 2. Reduced salinity in agricultural, pastoral and forest lands

❖ Baseline

Climate change is manifesting itself in increased droughts, increased temperatures, rainfall decline, flooding, seawater encroachment, salt-water intrusion and has exacerbated land salinization. This has resulted in: (a) a loss of lands with the abandonment of large soils, which have become uncultivated; (b) lower soil fertility leading to a significant decline in yield and production; and (c) soil erosion mainly from run-off, etc. The current production techniques and technologies are still inappropriate on salinized lands, which are often worked using the same methods as in arable lands in the absence of appropriate technological packages approved by research. Indeed, the current situation regarding knowledge on salinized lands and its impacts requires improvement. Most intervention structures have no reliable information on affected areas let alone on gradients to adapt their intervention methods.

❖ Adaptive alternatives

Various technologies will be developed to reverse the land salinization trend. It is to combine technical activities (fertilization, fight against erosion, reforestation, etc.) as well as water retention infrastructures and equipment (anti-salt dikes) and rainwater storage activities. Integrated processing mechanisms that are biological, chemical and physical will be developed according to the ability of each technology against the type of soil under review and its purpose (agricultural, forest or pastoral) to favour saline land restoration and improve their fertility. Effectiveness and community ownership of these adaptive and preventive measures implies they should be both technically effective and economically viable.

Output 3. Good practices on sustainable land management will be promoted for the recovery of salinized lands

- Promoting reforestation (fodder species on grassy salt flats)
- Secondary salinity of the soil is due to human activities such as land clearing and over-irrigation. These activities result in groundwater rising to the surface, dissolving the salts and then depositing them in the soil. In areas unfit for farming such as the project area, reforestation operations adapted to pastoralism will be developed in close collaboration with the Senegal Forest Service (DEFCCS). Indeed, the project will combine

large-scale reforestation and agroforestry techniques (intercropping, the taungya system, mixed cropping) applied in open fields with species recognized for their ability to effectively participate in improving land fertility under the influence of salinization. Protecting soils against the various forms of erosion (mulching)

Salinization is spread by erosion and transport of salts in poorly structured soils. Anti-erosion systems (DRS/CES) will be set up in various sites to fight against wind and water erosion particularly in watershed areas. The specificity of these works is that they will be built using local materials (clay, straw, etc.) and will use the local workforce only. INP has already tried this in the Diendiem Valley, Sedhiou area. In total, 10 basins with high agropastoral potential will be identified to receive their interventions.

- Mangrove restoration

Rising sea levels are further extending the reach of seawater into arable lands. Mangroves play an important role in seawater flood control ("buffer effect"). The areas surrounded by mangroves are much less prone to seawater flooding. Mangrove reforestation, a natural barrier to saltwater intrusion, will be carried out in the project sites in collaboration with the DEFCCS and research (ISRA) near the sea environments in Sine-Saloum to limit saltwater intrusion on lands and safeguard agro-sylvo-pastoral and fishery productions in these areas highly sensitive to climate change impacts. In addition, this activity provides numerous co-benefits for coastal protection and for the fishing industry.

In addition, the mangrove ecosystem provides an important role in supporting livelihood activities such as oyster farming, wood for construction, in addition to related activities such as beekeeping (honey mangrove is among the most popular).

- Promoting biosaline agriculture

Varieties adapted to salty soils will be tested in the intervention sites in collaboration with research (ISRA), then disseminated on a large scale to serve as alternative productions. Together with desalination activities, which are often lengthy and expensive, other adaptive methods should be explored such as the use of biosaline seeds. INP has already carried out a large-scale experiment of millet seeds (sorghum and sunna) imported from China in the salt flats located in the village of Ndiaffate. The results are highly promising. The aim under the project is to spread it and at the same time to develop research/development activities. In collaboration with national institutions (AFRICA RICE) and foreign partners of INP, a wide range of seed varieties (sorghum, millet, maize, rice, etc.) will be grown over about 100 ha on an experimental basis in each of the six intervention sites of the project, leading to a total of 600 ha.

There will be introduction of new varieties to be piloted at a small scale. Later on the seeds can be distributed to local farmers.

- Improving soil fertilization

This activity will be conducted through:

- ✓ Mineral amendments of lands: It includes inputs in natural phosphate of Matam. A total of 50,000 ha of lands (including both salinized and not salinized lands) over the four years of the project's life span divided across the six project sites will get amendments in natural phosphate of Matam so the impact on soil pollution will be relatively low; and
- ✓ Organic amendments to salinized lands: they will help to address deficiencies in soil organic matter and increase water retention capacity and nutrient fixative power of soil by strengthening their absorbent complex. It will include inputs in manures and composts according to the availability in the project areas. These amendments also aim to recover salinized lands, especially with peanut shells, among other things. Considering the difficulties in meeting the inputs necessary to improve compost in some areas, a five-year goal of 1,000 composting units is set. The project will also support producers who will freely commit to obtain some small composting equipment.

- The development of grazing areas (agricultural, forest fallows and assisted natural regeneration)

Deforestation, land degradation and degraded lands are often caused by the search by farmers for grazing lands, as theirs become unproductive from overuse and poor management. By improving grazing lands, farmers are less likely to

contribute to land degradation and clearing for new grazing land. This activity will help to reduce some of the root causes driving land degradation and therefore salinization. Natural soil regeneration techniques (assisted natural regeneration (ANR)) through fencing on agricultural, pastoral and forest lands will be disseminated in collaboration with DEFCCS and research (ISRA) to fight against erosion, facilitate infiltration, foster biological rise and preserve these lands. Focus will also be placed on a system to monitor these fenced areas and on developing a simple management plan for the ultimate improvement of the protected areas.

Output 4. The construction of hydraulic works to reduce the effects of water run-off and leaching that contribute to salinization

- The installation of water holding works (small dams and artificial basins)

Run-off retention works in the form of small dams, which will be installed to allow leaching of salinized lands to foster continuous development of production activities downstream. Artificial retention basins will also be installed in other places with low availability of surface water.

- The development of large ponds to ensure water availability for at least seven months

Developing ponds through re-excavation to increase their filling rate while carrying out reforestation in the surroundings will reduce evaporation while organizing the exploitation of natural resources. The project will allow for:

- (a) The establishment of a baseline situation with the mapping of all existing ponds in the target area and typology of users as well as their needs and constraints;
- (b) The conduct of a technical feasibility study for the optimal use of the ponds; and
- (c) The completion of improvement works in 10 ponds selected for the operation.

- Construction of anti-salt and anti-erosion works

Secondary anti-salt works made up of bunds will be built to support local populations using local materials to extend the achievements of projects such as PAPIL and PADAER which are financing and making huge investments in this field. These anti-salt works will be built mainly to control salinity.

200 frame bunds will also be built in the project areas that are affected by water erosion. These bunds are small works placed in a moving strip (in successive rows or in squares) on the watersheds formed by the valley areas. They help to stop the rainwater run-off on sloping fields so as to reduce gully erosion or through land transportation. The ultimate goal is both to protect valley areas below silting (which makes them unproductive), but also to facilitate water infiltration blocking seawater intrusion, while helping to recover part of this water for production needs. The number of bunds will vary depending on the size of the each valley and the number of valleys considered. (See figure 2 photos of anti-salt bunds).

- Promoting small-scale irrigation (drip)

The project will disseminate small-scale irrigation especially with the 'drip' system to regulate and rationalize groundwater the overuse of which is among the causes of saltwater intrusion, salinity of vegetable lands particularly and lower productivity of this important commodity both at social and economic levels for the country.

Component 3. Strengthening resilience of grass-roots communities

❖ Baseline

The degradation of the environment, partly due to climate change, and the fresh water deficit, are among the main constraints to the socioeconomic development of the country. The majority of the agricultural production is rain dependent and therefore highly subject to climatic hazards. Hence, the need for better water management to secure production and ensure the continuation of productive activities throughout the year; thus providing an alternative to food security, securing the jobs and incomes of the population and ultimately the growth of the national economy.

In the project intervention area, food insecurity has become persistent due to the continuous decline of farm production resulting from climate change but also from low investment in the farming sector as well as the rising prices of food products. In addition, there is high pressure on natural resources, caused by land scarcity and/or degradation of local livelihoods, increasing the impoverishment of local populations. All of these factors contribute to land salinization and, at the same time, are also a result of land salinization which is becoming more intense due to climate change.

❖ Adaptive alternatives

This component seeks to create the social enabling environment to ensure the long-term sustainability of the previous components. The aim is to develop the resilience of local communities that have been severely hit by the increasing trends in climate and desalinization by:

- (a) Improving the food security of populations through better control of production and management throughout the year, especially during the bridging periods;
- (b) Promoting income-generating activities to compensate for loss of productivity and income resulting from the degradation of ecosystems due to climate change; and
- (c) Strengthening capacities mainly through information and training.

The project aims to better control rainwater resources for increasing resources and their best utilization for agricultural, pastoral, fishery production, mainly through: (a) improved water availability in large ponds for at least seven months of the year; (ii) development of fish farms to ensure the availability of fresh fish; (c) replication of adapted seeds; and (d) improvement of the availability of vegetables, etc. These will provide diversified incomes so that the vulnerable populations are more buffered against climate shocks. Without addressing human livelihoods, the cycle of poverty and environmental degradation will not be broken. Capacity-building and training for farmers to draw the most benefit from existing agricultural production will reduce losses because of lack of access to processing and storage facilities. This is important because it will reduce the need to over-farm lands to make up for off-farm production losses. Ultimately, the Green Climate Fund (GCF) resources through component 3 will contribute to the implementation of PSE, and specifically its second pillar (human capital, social protection and sustainable development).

Output 5. Food and nutritional security of grass-roots communities is ensured through improved production and income from on-farm products

- The provision of adapted seeds for at least 50 per cent of farmers

This activity will be achieved through the development of farms for replicating certified quality seeds (maize, rice and groundnut). The programme will include:

- (a) Identifying pilot producers of the targeted seeds based on criteria defined by the rural development services;
- (b) Training 30 pilot producers on seed legislation and targeted seed production techniques;
- (c) Putting in place inputs and small farm equipment for the production of targeted seeds;
- (d) Conducting farm monitoring in collaboration with the rural development services;
- (e) Performing the analysis and certification of the seeds produced;
- (f) Ensuring packaging of certified seeds obtained; and
- (g) Disseminating the certified seeds produced under the project.

- Better management of bridging periods

It should result in better production planning throughout the year and building food security stocks in villages. It entails:

- (a) Building and equipping 20 warehouses for storing local food products;
- (b) Building an initial stock of local food products of 20 tonnes per warehouse to support farmers during bridging periods

through a loan scheme (zonal grain bank scheme);

- (c) Equipping zonal grain banks with weighing equipment (weighing machines, scales, etc.) and calculators;
- (d) Setting up committees to manage the zonal grain banks; and
- (e) Training members of management committees and providing them with management tools.

- The conservation, processing and marketing of farm productions

It involves the establishment of local processing units of easy use that are financially accessible, opening warehouses for stocking crops and the implementation of a communications and promotional plan for local products, among other activities, there are plans to:

- (a) Develop 20 multipurpose units for processing farm produce;
- (b) Support the establishment of unit management committees;
- (c) Organize training sessions of 30 beneficiaries per unit on processing, packaging and storage techniques with 10 members per management committee being trained on organizational development, and another 10 members on the administrative, financial and accounting management of processing units; and
- (d) Develop a communications and promotional plan of local products (shows, local forums, displays, brochures, participation in fairs outside the area).

- Organizing producers in cooperatives and facilitate partnerships

Producers will pool their knowledge, know-how and resources through collective or community-based organizations to build their technological capacities (production of collective work, mechanization, etc.), financial and investment capacity (joint surety), economic and commercial (negotiating and partnership) which can ensure the sustainability of the project interventions. Thus, the project will support the establishment of seven cooperatives in the intervention sites.

- Producers' training on innovative salinized land management techniques

To address the anthropogenic causes of land degradation, producers will have to change their bad practices to more innovative and more appropriate techniques that will be disseminated by the project in close collaboration with the research and development institutions involved in the sustainable land management. In total, 1,000 producers selected from the cooperatives will benefit from this training of 200 producers annually.

- Training of producers on salt extraction techniques

In areas where the land salinization process is almost irreversible (the salinity gradient exceeds the maximal threshold considered as the minimal threshold for reversing the land salinity trend) and the populations are already engaged in salt production, the capacities of producers will be reinforced in terms of collection, storage and transport of salt to limit the adverse effects of run-off and winds on the contamination of other areas. At least 500 farmers will be targeted in this training programme on salt extraction techniques that will focus on: (a) appropriate salt production techniques, (b) development of storage sites to avoid salt infiltration in the soil, and (c) protection of stocks against the spread of salt silt by the wind, etc.

Output 6: Grass-roots livelihood diversification of communities' exposure to losses from climate change

- Agro-sylvo-pastoral development of large ponds and basins

It involves:

- (a) The establishment of an institutional and organizational diagnosis of the various groups of users;
- (b) The establishment and support of 10 pond protection committees;
- (c) The development and implementation of a plan to strengthen the technical, organizational and institutional capacities of the groups of users with 30 per site on the promotion of resilient activities (agriculture, livestock, fish farming, agroforestry, reforestation, etc.), another 30 for institutional and organizational development and 30 more on

partnership with other actors, including the private sector as well as in negotiating techniques; and

(d) The conduct of annual reforestation campaigns around the ponds from the establishment of village nurseries.

- Availability of vegetable products and animal fodder for at least eight months of the year

Operations will be carried out through:

(a) The identification of direct beneficiaries of vegetable production and the establishment of management committees of 10 vegetable perimeters;

(b) The support of the development of 10 vegetable perimeters of at least 5 ha each to recover water points (ponds, boreholes, wells);

(c) The establishment of basins and adaptation of an irrigation system to the area;

(d) The provision of inputs for vegetable production and fodder cultivation as well as small farm and mowing equipment;

(e) Training of beneficiaries (30 per site) on the techniques of vegetable and fodder production, crop planning, product marketing, storage and enhancement; and

(f) Construction and equipment of 10 warehouses for stocking and storage of vegetable and fodder products.

- Production of fresh fish in sufficient quantity for a long period of the year

Activities in this area mainly consist of :

(a) Developing at least five fish farms;

(b) Supporting the establishment of fish farm management committees;

(c) Training of beneficiaries (30 per site) on the management and production techniques of fish farms;

(d) Acquisition of juvenile fish to stock fish farms;

(e) Feeding of juvenile fish;

(f) Securing small fishing equipment (fishing nets, landing nets, basinets, scales, etc.); and

(g) The monthly monitoring of fish farming with the support of the National Aquaculture Agency.

- Creation of women-specific income-generating activities to enhance their purchasing power

Activities will build on the creation of income-generating activities in villages, especially in the fields of culture de case (in rural areas, agricultural activities near houses, usually by women), small ruminants rearing, small trade, etc. Every year 100 women producers will be supplied with inputs and small equipment for culture de case. Another group of 100 women will be supervised in the development of small ruminant rearing (purchase of animals, veterinary care, feed and watering, etc.). A fund of at least USD 100,000 will be put in place for small trade development while the project will provide intermediation to help to sell local products, facilitate market access and promote real value chains.

C.4. Background Information on Project / Programme Sponsor

Describe project/programme sponsor's operating experience in the host country or other developing countries.

The following is a description of the organizations participating in the implementation of this proposed project.

CSE is the national implementing entity, already accredited by the Adaptation Fund (AF), and capitalizing on its significant experience in implementing climate change-related projects, including the InfoClim project (with the International Development Research Centre – 525,000 Canadian dollars in 2008–2011), which developed a participatory information platform for vulnerable communities' adaptation to climate change. Moreover, CSE has developed the "Adaptation to coastal erosion in vulnerable areas" project which received USD 8.6 million from the AF and was successfully implemented (2011–2014) under the direct access modality of the AF. The achievements of this project include: the building of coastal protection works, the development of fish processing areas and a fishing wharf, the update of the regulatory framework and important awareness raising and capacity-building activities. CSE has thus acquired in-depth expertise in overseeing large-scale projects implemented following multi-partner arrangement. Indeed, this project was successfully executed in close collaboration with a public institution, an NGO of national scope

and a local women's association. Furthermore, CSE also provided support for the establishment of scientific service centres on climate change in other countries like Ghana and Burkina Faso. CSE was one of the project pilot institutions of LADA (Land Degradation Assessment in Drylands) through which the land state assessment was conducted at the national and local levels. CSE activities are also consistent with the result areas of the GCF as CSE works through five major programmes, namely: **E**nvironmental monitoring and food security, **N**atural resources management and support to local development, **E**nvironmental evaluation and risk management, **S**ocioeconomy of the environment and finally **R**esearch-development. In addition, the CSE governing body comprises representatives of the Senegalese Government, the private sector and civil society which allows for a real involvement of stakeholders throughout all CSE-managed projects and programmes.

RADI is an NGO that was established in 1985 whose mission falls within the individual and collective promotion of African populations through an integrated, participatory, popular and democratic development strategy. It generally intervenes in various areas such as: agricultural production and food security, village hydraulics and sanitation, natural resource management, community health, human rights, including gender, education, promotion of local products and entrepreneurship, etc. It plays an overarching role in social engineering and direct supervision of grass-roots communities. It is active in the project intervention area mainly through village water programmes (construction of boreholes, water towers, water supply systems, standpipes and house connections), rural sanitation, food security, social engineering and direct supervision of grass-roots communities (associations of borehole users, producers' associations). RADI is financed by bilateral and multilateral partners in order to implement its projects and programmes.

RADI intends to take advantage of the project additionality to develop mechanisms for economic and financial improvement of the investments made in fighting land salinity especially through the promotion of genuine rural entrepreneurship in the project area.

INP has the sovereign mission of assessment, restoration and regeneration of land across the country. INP and has proven expertise in: (a) mapping and characterizing soils; (b) combatting salination through the application of phosphogypsum; (c) support (training, acquisition and application of inputs) for organic (compost) and mineral (rock phosphate Matam) soil amendments; (iv) the implementation of DRS/CES actions (bund frames, stone barriers, etc.); and (v) anti-salt dike construction using local materials (sand, straw, etc.) and the abundant use of local labour (Diendiem valley). All these important experiences will be rolled out to scale in the project area. INP has developed a methodology for mapping salinized lands at 1/100,000 (already experienced in the intervention area) and through this project envisions developing maps at 1/5,000 for high efficiency interventions. Finally, INP has a network of delegations in different regions and climatic zones within the country, particularly in the project area, allowing close project supervision.

IUCN is an international organization with a powerful network of members comprising governments, NGOs and associations that share the same vision centred on equity, development and the conservation of nature. It seeks to mobilize thousands of conservation experts who voluntarily contribute to its six global commissions and high-level scientific and technical skills on issues pertaining to education and communication; environmental, economic and social policies; the rights of the environment; ecosystem management and species safeguard. It is very active in climate change adaptation at the regional level: in Mauritania (area in the Diawling National Park), in the Niger Interior Delta, Mali and North Cameroon (Waza Logone).

IUCN-Senegal has had the privilege of being selected by the Global Mechanism of the Convention to Combat Desertification and Land Degradation as facilitator of the inter-sectoral and inclusive process for drafting Senegal's National Strategic Investment Framework for Sustainable Land Management (CNIS/GDT) following a selection by the Global Mechanism of the Convention to Combat Desertification and Land Degradation.

In Senegal, IUCN intervenes in the project area in the field of the environment and NRM in general and climate change (CC) in particular, according to an approach underpinned by the three pillars – *knowledge, empowerment and governance* – with the development of several CC adaptation projects in the Saloum Delta area, including:

- The project “Integrating climate change adaptation in poverty reduction strategies in West Africa” or PREMI (Districts of Fatick and Foundiougne) aimed at improving the integration of climate change adaptation strategies in local-level development planning instruments; and
- The project “Ecosystems for the protection of infrastructures and communities” or EPIC (2013–2017), in the district of Foundiougne primarily seeks to promote an ecosystems approach in natural disaster management. Its ultimate goal is to enhance the resilience of communities and natural systems through support to endogenous climate change adaptation strategies in the areas of land salinity, water erosion and deforestation of agroforest parks.

These projects made it possible to develop several tools and methodologies such as:

(a) Climate Proofing and the Toolkit for Planning and Monitoring-Evaluation of Climate Change Adaptive Capacities; and

(b) Various technologies in the fields of:

- o (i) ANR;
- o (ii) The construction of small anti-salt bunds using local materials; and

(c) The development of a mechanism to regulate access to and use of natural resources (forestry and fisheries) with the drafting of local conventions based on a territorial approach.

IUCN intends to leverage the project additionality to scale up these experiences and facilitate their large-scale replication to further highlight the expected potential positive impacts in terms of community and ecosystem resilience.

In addition to their intrinsic experiences and skills in their specific intervention areas, these stakeholders have the following in common: (a) intervention in the same project area, (b) they belong to the same consultation and action frameworks (i.e. COMNACC and the COMRECC); (c) complementarity in approaches and activity types. IUCN targets more institutional and strategic capacity-building; RADl targets the individual and collective capacities through social marketing and economic promotion of products and INP the technological capacities proper. These structures will benefit from the expertise of CSE on environment and natural resources monitoring and its experience in managing adaptation projects.

Finally, the national implementing entity (CSE) and implementing partners could build on a strong baseline through research and development institutions and various other stakeholders (including local communities, NGOs, the private sector, etc.) which are very active in the field of environment and natural resources management.

C.7. Institutional / Implementation Arrangements

Please describe in detail the governance structure of the project, including but not limited to the organization structure, roles and responsibilities of the project management unit, steering committee, executing entities and so on.

This project document is the basis on which agreement for project support will be reached and as such is the instrument through which the project will be implemented and executed. The proposed institutional arrangements aim to ensure a good project execution and the sustainability of its results through the close involvement of various stakeholders. Therefore, the project will feed into the existing sustainable institutional arrangements while favouring the involvement of other stakeholders through a strong partnership based on consultation and action frameworks and mechanisms, including a national steering committee (NSC), a scientific and technical advisory committee and regional and local consultation and action frameworks. The project will be managed from a project coordination unit (PCU).

Project coordination unit (PCU)

The PCU will be based at CSE and will be run by a national Coordinator to be recruited through tender. He or she will be assisted by a national expert in monitoring and evaluation, an Assistant Executive Secretary and support staff. PCU

will be responsible for the design, implementation, substantive monitoring and internal evaluation of the project activities under the authority of the implementing entity that runs the project administrative and financial management.

Implementing entity

Through its Climate Finance Unit, CSE will be responsible for overseeing the project and implementing partners, including technical and financial implementation, and ensuring that the project is consistent with the project design; and the due diligence, fiduciary and safeguards requirements to which it is held.

CSE also has an important role to play in building synergy between the project and other initiatives by Senegal in complementary areas in order to facilitate experience sharing especially of good practices. More specifically, CSE will be responsible for regularly submitting to the GCF technical and financial progress reports related to the project, thus regularly reporting on the project management and level of achievement of the set objective and expected results. As a national implementing entity, responsible for the technical and financial supervision of the implementation of the project, CSE will hire a consultant or firm to support the technical supervision and certification of work before formal approval for payment (e.g. civil engineering works). CSE will also be responsible for ensuring that the implementing partners meet CSE fiduciary standards, including AML/CTF risks in the project proposal.

CSE, as the implementing entity which delegates some implementing responsibilities to the implementing partners, will sign agreements, including contract specifications, with each agency for implementing the considered component. Under the prerogatives of project execution supervision, CSE shall approve all contracts signed between the executing agency and service providers. These agreements between the CSE and the implementing partners will be supplied to the GCF Secretariat before the first disbursement is requested.

The modalities will be based on CSE's Procedural manual, taking into account other CSE strategic documents such as the Project cycle management manual, the Monitoring and evaluation manual, the Environmental and social risk management manual as well as its Gender policy. This Procedural manual will also be supplied to the GCF Secretariat before the first disbursement is requested.

CSE will be the GCF implementing entity and will work through three implementing partners who are qualified to implement the institutional- (IUCN), biophysical- (INP) and community-level activities (RADI). These capacities have been described in the previous section above. CSE, as the GCF implementing entity, will be accountable for overseeing the work of the three agencies and reporting to the National Steering Committee.

The various committees that will set up are described below:

- **National Steering Committee (NSC)**

NSC members will include national designated authority, representatives of key public sector, private sector and civil society stakeholder groups. Other members may be co-opted to the NSC to discuss emerging technical or administrative issues. The NSC will be chaired by the President of the COMNACC and will meet at least twice a year to consider project progress, budgets, workplans, targets and key reports. Additional meetings may be required to review important documents or make decisions on issues/project direction. In order to ensure the ultimate accountability of CSE for project results, the decisions of NSC will be made in accordance with standards that ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. CSE will report to NSC on behalf of the implementing partners.

- **Local Steering and Technical Committees**

These committees will be set up in each of the two districts of Foundiougne and Fatick, will be chaired by the Prefects of those districts and organized around the existing regional climate change committee, COMRECC. It will be extended to major stakeholder's representatives at local level (local communities, projects, communities, the private sector, the district technical structures, etc.). These committees are charged with the supervision and monitoring–evaluation of

project activity implementation at the local level according to the workplan in each district. CSE, on behalf of the three implementing partners will report to these committees. All three implementing partners will participate in these meetings.

- **Scientific and Technical Committee**

The Scientific and Technical Committee will be built around the Scientific Committee of CSE. This committee comprises top senior scientists in various fields, including natural and social sciences. It will be extended as needed to any useful resource person. This advisory committee aims primarily to provide scientific and technical support to the project for designing strategies and activity programmes, monitoring of their technical implementation mainly through field visits, and evaluation of project results. It will provide technical advice on the documents drafted under the project and technical recommendations upon request of NSC. It will have rotating chairmanship according to the agenda and theme considered.

Describe construction and supervision methodology with key contractual agreements

In order to establish a legal framework to the execution of the project, implementation agreements will be signed between CSE and each of the implementing partners. These agreements will state clearly roles and responsibilities of each party, the procedures to be followed for the key activities such as procurements, budget affected for activities involved, etc. In this regard, CSE's key procedural and policy documents will be primarily used and will be annexed to these agreements (handbook of contracting procedures, M&E manual, Environmental and social policy and gender policy).

These conventions will allow CSE to perform an overall supervision of the activities of implementing partners and the project.

Implementing partners in turn will establish service provision contracts with both public and private partners to achieve the selected activities.

As part of the implementation, the project will sign memoranda of understanding with any structure that can provide support for the drafting of contractual arrangements duly approved by the technical supervisory authority, which shall guarantee observance of the project's financial and management procedures in accordance with the Procedural manual of CSE used as a reference both for any contractual operation within the project and for the project's relationships with its partners. Monitoring the compliance with the technical commitments rests with the project under the control of the executing agency and supervision of CSE.

As the national implementing entity, responsible for the technical and financial supervision of the project implementation, CSE will recruit a consultant or consultancy firm to support technically in the supervision of the works and approval of requests of payment (civil engineering).

With the experience gained by CSE in running its Adaptation Fund project, implementing agreements with the implementing partners will be done as follows:

- Signing of protocols: two to three weeks after confirmation of project approval; and
- Payment of the first instalment: 45 working days after receipt of the funds in the dedicated CSE account.

It should be noted that the implementing agencies will be obliged to comply with the Procurement procedures manual of CSE. A copy of this manual will be provided to each entity when signing agreements. If necessary, CSE will organize workshops for the executing entities in order to explain the content of the manual. An agent of CSE will sit on each procurement committee. All contracts will be subject to the approval of the CSE General Manager, sole authority to decide on the last recourse of third parties in cases of dispute. The CSE General Manager always bases these

decisions on the CSE Procedure manual.

IUCN, RADI and CSE are exempt from value added tax, while the INP is not.

Provide a timetable showing major scheduled achievements and completion for each of the major components of the project.

Please see Table below in Section C.

C.8. Timetable of Project/Programme Implementation

Please provide a project/programme implementation timetable in [section I \(Annexes\)](#). The table below is for illustrative purposes. If the table format below is used, please refer to the activities as numbered in Section H. In the case of outputs, please mark when all the required activities will be completed.

ACTIVITY No	COMPONENT/OUTPUT/ ACTIVITY	Year1	Year2	Year3	Year4
Component 1: Strengthened individual and institutional capacities for improved land management to reduce salinization					
	Output 1: The climate change institutional and knowledge framework is strengthened				
1.1	<i>Integrating climate change and natural resource management into existing local conventions</i>				
1.2	<i>Strengthening local climate change consultation committees to coordinate adaptation efforts</i>				
	Output 2: The knowledge base on salinized lands is improved				
2.1	<i>Creating maps of salinized lands for specialized users</i>				
2.2	<i>Disseminating climate information about salinization to communities and raising awareness</i>				
Component 2: Reduced salinity in agricultural, pastoral and forest lands					
	Output 3 : Good practices on sustainable land management will be promoted for the recovery of salinized lands				
3.1	<i>Promoting reforestation (fodder species on grassy salt flats, etc.)</i>				
3.2	<i>Protecting soil against the various forms of erosion (mulching)</i>				
3.3	<i>Mangrove restoration</i>				
3.4	<i>Promoting biosaline agriculture</i>				
3.5	<i>Improving soil fertilization</i>				
3.6	<i>The development of grazing areas (agricultural, forest fallows and RNC⁶)</i>				

⁶ Réserve Naturelle Communautaire (Community-Managed Nature Reserve)

	Output 4 The construction of hydraulic works to reduce the effects of water run-off and leaching that contribute to salinization				
4.1	<i>The installation of water holding works (small dams and artificial basins)</i>				
4.2	<i>The development of large ponds to ensure water availability for at least seven months per year</i>				
4.3	<i>The construction of anti-salt and anti-erosion works</i>				
4.4	<i>Promoting small-scale irrigation (drip)</i>				
Component 3: Strengthening the resilience of grass-roots communities					
	Output 5: Food and nutritional security of grass-roots communities is better provided				
5.1	<i>The provision of adapted seeds for at least 50 per cent of farmers</i>				
5.2	<i>Better management of bridging periods</i>				
5.3	<i>The conservation, processing and marketing of farm productions</i>				
5.4	<i>Organizing producers in cooperatives and facilitating partnerships</i>				
5.5	<i>Producers' training on innovative salinized land management techniques</i>				
5.6	<i>Training of producers on salt extraction techniques</i>				
	Output 6: Grass-roots livelihood diversification to communities' exposure to losses from climate change				
6.1	<i>The agro-sylvo-pastoral development around large ponds and basins</i>				
6.2	<i>Availability of vegetable products and animal fodder for at least eight months per year</i>				
6.3	<i>The production of fresh fish in sufficient quantity for a long period of the year</i>				
6.4	<i>The creation of women-specific income-generating activities to enhance their purchasing power</i>				
6.5	<i>Creation of women-specific income-generating activities to enhance their purchasing power</i>				

D.1. Value Added for GCF Involvement

Please specify why the GCF involvement is critical for the project/programme.

WITHOUT THE GREEN CLIMATE FUND

The various initiatives of the Government of Senegal and its development partners in salinized lands management, listed in the baseline, still face institutional and technical barriers as well as socioeconomic constraints. Without GCF support, these initiatives will remain limited by the following:

- **At the technical level**, the current measures will be hampered by their one-off and scattered nature reducing their spatial and temporal representativeness and thus compromising their ecological, social and economic impact both at the national, regional and global levels (in terms of lessons learned to be disseminated);
- **At the institutional level**, the poor coordination of interventions, inadequacy of laws taking into account the CC specificity in local development plans, difficulties in mobilizing material and financial resources for a real and sustainable consideration of the CC dimension will remain;
- **At the socioeconomic level**, the grass-roots communities' living conditions will further deteriorate with the continuous process of land salinization and its consequences on populations' productivity and incomes; and
- At the financial level, the State's limited resources and the grass-roots community poverty inhibit possibilities to overcome the constraints and barriers to combating CC and their impacts with regard to land salinization.

WITH THE GREEN CLIMATE FUND

The GCF project will contribute to strengthening the technical, institutional and resilience capacities of communities as follows:

- **At the technical level**, through the adoption and scaling up of evidence-based adaptation practices in the effective management of salinized lands;
- **At the institutional level**, stakeholders networking to develop an advocacy and put in place a mechanism of consultation, coordination and action to better address the CC issue at the legislative, financial, planning levels (priority...), etc. In this regard, according to the additionality principle, the project will reinforce and supplement actions from other stakeholders already active in the field of salinized lands such as PAPIL and BARVAFOR amongst others; and
- **At the socioeconomic level**, by enhancing community resilience through improved yields and productions, (food security); creation and/or consolidation of green jobs (fight against the exodus of youth and women), improved access to land for women and youth through increased arable lands (with restoration), higher incomes through increased cultivation of high cash products (vegetable and fruit tree production) and the development of new sectors and value chains.

D.2. Exit Strategy

Please explain how the project/programme sustainability will be ensured in the long run, after the project/programme is implemented with support from the GCF and other sources, taking into consideration the long-term financial viability demonstrated in [E.6.3](#).

Project strategy

Principle of additionality associated with this project: Achieving sustainable impact is a major consideration in the design of this project. Effective participatory, gender sensitive approaches and vulnerability assessments, ensure that project intervention is designed to meet beneficiaries' needs and that all key partners and beneficiaries have strong ownership of project outcomes. Adaptive management, through effective monitoring and evaluation, ensures that project implementation builds on the ongoing assessment of project results' impact and lessons learned, as perceived by beneficiaries and partners, to enable the fine-tuning of activities and the implementation approach. Alignment with key national strategies and plans ensures that the project operates within the framework of nationally agreed priorities

towards long term objectives and targets.

It is essential for the project management team to assess and monitor the likely sustainability of all aspects of project support during implementation, in order to ensure that sustainable outcomes are achieved. Capacity-building for national and regional institutions will help to ensure that institutions are able to continue to monitor the effectiveness and sustainability of their actions following completion of the project, and to improve their effectiveness. Capacity-building and technology transfer under the project will only be 'effective' in the long term if it helps to establish sustainable systems, institutions and approaches. One crucial consideration here is that the 'solutions' and approaches introduced by the project must be appropriate to the financial and technical resources available in the long term. Learning from past initiatives, the project will not use its substantial resources to introduce measures that are too expensive or too sophisticated to be maintained beyond the project's life span, given the resources that are likely to be available locally. The project will therefore deepen its engagement with key technical services like INP and the Regional Directorate for Rural Development (DRDR), inter alia, to agree to the operation and maintenance of the project's outcomes in the long run. Furthermore, Senegal is experiencing a decentralization process, started since the French colonization period. Nowadays, the process is in its third phase resulting in more powers transferred to local government units for all local development-related initiatives, including in the area of environment and natural resources management, development planning, land management, etc. This is why almost all communes have developed a local development plan. Therefore, local authorities and local communities have the mandate to continue sustaining project outcomes. At this end, there will be MOUs and agreements between the local governments, landowners, and NGOs on the arrangements for maintaining works after implementation. Ultimately, the project's resources will be used to prepare a coordinated strategy for gradually shifting from a project-approach towards long-term thinking and strategic action. Planned to be executed no later than 12 months before the end of the project, this exit strategy will allow for the preparation of recipients to maintain and consolidate the achievements at project completion. It will take into account gender considerations in order to safeguard the interests of women and vulnerable groups beyond the project life.

Environmental sustainability is a core principle of project support, consistent with GCF objectives; the project objective to increase the resilience of ecosystems and communities will only be effective in the long term if the approaches developed under the project are environmentally sustainable. By increasing resilience to climate change in the agriculture sector, and increasing awareness of key issues and risks at all levels, the project will have a corresponding impact in strengthening the environmental sustainability of agricultural production systems.

Under this project, the following types of partnerships with other stakeholders will be considered:

- Memoranda of understanding to complete project activities with institutional support will be established with State regional technical services, research institutes, training institutes, etc., in their respective areas of competence, especially for the technical supervision of local populations. They provide financial and technical support to State structures mainly responsible for the supervision and monitoring of project activities so as to ensure the sustainability of their interventions. To do so, emphasis will be placed on the project response to actual financing needs (gradual support in the State's ordinary investment budget) and technical strengthening (integration of new technologies in the ordinary technical packages of supervision structures);
- Contracts will be developed with apex organizations that benefit from the project to support farmers' groups. These plan contracts to be established in a tripartite manner between the project – the supervision structures and producers' groupings – will help to organize producers, facilitate their access to technologies, funding and credit to enhance their autonomy in implementing the activities and subsequently their future interventions;
- Co-financing protocols will be signed with partner projects and programmes in order to support common or complementary programmes established among the parties;
- Intermediation will be developed by the project to link local communities with other stakeholders who are active in areas not directly addressed by the project. It will facilitate the development of partnerships between

local communities and other stakeholders in areas that are useful and complementary to project activities. It is in this context that we can put together partnerships among actors of the same sector to set up value chains or cooperation agreements between cooperatives and some private individuals (mainly suppliers) even with some NGOs involved in the social and economic fields; and

- Contract specifications will be set with companies responsible for the completion of infrastructures. The idea is to define the conditions for maintenance, by the company, of the works to be built against their lifetime. In addition, as part of the participatory implementation of the project and public–private partnership to be developed, the shares of responsibility in the maintenance of each stakeholder will be defined both for the private sector and local collectives, the State and local communities.

In this section, the accredited entity is expected to provide a brief description of the expected performance of the proposed project/programme against each of the Fund's six investment criteria. Activity-specific sub-criteria and indicative assessment factors, which can be found in the Fund's [Investment Framework](#), should be addressed where relevant and applicable. This section should tie into any request for concessionality made in [section B.2](#).

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1. Adaptation impact potential

Specify the mitigation and/or adaptation impact, taking into account the relevant and applicable sub-criteria and assessment factors in the Fund's [investment framework](#).

The project directly contributes to two of the GCF level impacts through:

- GCF result area 1: The project will increase the resilience and enhanced livelihoods of 129,804 of the most vulnerable people in the six communes in the project area. It is estimated that 50 per cent of these persons will be women, 20,769 will be direct beneficiaries and 109,035 indirect beneficiaries; and
- GCF result Area 4: Through a number of direct biophysical activities (component 2) as well as by removing some of the socioeconomic drivers of salinization (component 3), the project will improve the resilience of ecosystems and ecosystem services of 51,800 ha of productive lands by reducing and preventing salinization, which is exacerbated by increasing temperatures and more erratic rainfall patterns, but also by replanting mangroves and creating access to restricted forest areas ("*zone mise en defens*"), community-managed nature reserves, etc.

GCF outcome 5.0: Strengthened institutional and regulatory systems for climate-responsive planning and development; Outcome 6.0: Increased generation and use of climate information; and 7.0: Strengthened adaptive capacity and reduced exposure to climate risks, will be achieved through components 1 and 2 of the project which will contribute to enhancing the capacity of local governance structures, including at the governmental and community levels, through training, integration of climate change into up to seven local plans, and the development of improved knowledge and practical tools on salinization and climate change effects on salinization. A participatory approach will engage local farmers to apply and pilot new technologies and methods designed to adapt lands to new climate conditions that increase salinization.

E.1.2. Key impact potential indicator

Provide specific numerical values for the indicators below.

Under the co – benefits related to activities of other projects in the baseline, the following data are available

<p><i>Expected total number of direct and indirect beneficiaries (reduced vulnerability or increased resilience); number of beneficiaries relative to total population (adaptation only)</i></p>	<p><i>Total</i></p>	<p>20,769 direct beneficiaries and 109,035 indirect beneficiaries leading to a total of 129,804 beneficiaries (consisting of the population of the six communes of the project intervention area); 50 per cent of which will be women.</p>
	<p><i>Percentage (%)</i></p>	<p>20% of the population (of whom 50% are women) in the two districts of the project area</p>

<i>Other relevant indicators</i>	<p>51,800 ha of productive reclaimed lands by reducing and preventing salinization and rehabilitating land condition. In combination with community-level activities, it is estimated that food and nutritional security of 10,000 persons will be better provided for, and 1,000 households will be more food secure during the bridging periods between seasons (output 5).</p> <p>The improved overall livelihoods in the project area are expected to create and/or revive sustainable activities in the local economy that are resilient to climate change directly or indirectly involving more than 20,769 people in the activity value chains such as vegetable production, fish farming, the craft industry, livestock, etc. (local communities, traders, machinists, artisans, women and youth groups, product processors, transporters, etc.).</p>
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E.2. Paradigm Shift Potential
Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

Describe expected contributions to global low-carbon and/or climate-resilient development pathways through a theory of change for scaling up and replication (e.g. in terms of multiples of initial impact of the proposed project/programme).

The project will focus on promoting locally available and low-cost technologies that can be easily maintained by communities. This contributes to the potential for scaling up and replication because it is based on adaptations that: (a) have been shown by research and development institutes to be highly effective; and (b) are accessible because they use mostly available and cheap local materials which can be easily mobilized by most local communities.

The project will extend the benefits of previous project experience and best practices, such as those realized through a PAPIL support project by the African Development Fund. This project built major impoundment works to which this project will significantly contribute through the construction of secondary works or complementary development's enabling the largest number of people to benefit from such investment. Owing to the infrastructures built through the PAPIL project, rainwater that used to go directly into the sea have been retained and thus improving productivity and increasing the number of producers that can undertake agriculture activities in the PAPIL's intervention sites. The number of producers working in the area has increased, as well as the activities, including rice growing, beekeeping, fruit growing and market gardening.

Replicating the results of the project which is strongly related to its sustainability will be provided mainly through: stakeholders' capacity-building activities, scaling up of the project experiences; dissemination of its results and lessons learned through various information and communication systems.

Lessons learned from the project especially in terms of innovations in the technical, technological, organizational, institutional and financing areas will serve other projects both nationally and internationally through the GCF project portfolio in the fields of climate change adaptation. Training and participatory approaches used to implement this project will increase the chances that participants will continue to apply these technologies and knowledge to other parts of their livelihood creation.

Finally, the integration of climate change adaptation in local land management tools and supporting data and information, such as higher resolution land salinization maps, will ensure that climate change adaptation approaches are reapplied through their application through those umbrella policy and planning mechanisms.

E.2.2. Contribution to the creation of an enabling environment

Describe how proposed measures will create conditions that are conducive to effective and sustained participation of private and public sector actors in low-carbon and/or resilient development.

The project will build the capacity of all stakeholders, including public and private sectors and the communities, in the area of climate change adaptation in general and salinized land management in particular. It will support the capacities of stakeholders primarily through the *faire-faire* strategy used in Senegal.

The *faire-faire* strategy describes a partnership approach between government, civil society organizations, the private sector and communities that promotes coordination, information sharing, broad-based participation, optimizing resources, and sharing of roles and responsibilities to achieve project or program outcomes. This concept is reflected in the project design and institutional arrangements, particularly the setup of local steering and technical Committees and the active engagement of local governments at the district level to date. The *faire-faire* strategy will also be supported through:

- (a) Activities under component 1 which will focus on strengthening the government institutional capacities in legislation, financing, planning and other activities for improved climate resilience;
- (b) The institutional arrangement which will emphasize consultation, coordination, and participatory monitoring and evaluation of project activities to be conducted by the various stakeholders. This will be actualized through participation of COMNACC and COMRECC, which bring together relevant actors at the national and local levels, in the national and local steering committees;
- (c) The technical and technological outputs of the project which will be evaluated in a consensual manner through the Scientific and Technical Committee and be made available to all stakeholders.

In the longer term, project outcomes are expected to develop an enabling environment that will strengthen the operational capacities of the individuals by promoting new agro-industrial sectors and value chains, ensuring the effective development of salinized lands and related activities. Activities under the third component will also build technical and organizational capacities of grass-roots communities for the creation of green jobs.

E.2.3. Contribution to regulatory framework and policies

Describe how the project/programme strengthens the national/local regulatory or legal frameworks to systematically drive investment in low-emission technologies or activities, promote development of additional low-emission policies, and/or improve climate-responsive planning and development.

In line with national policy guidelines on climate change adaptation, as illustrated by the signing of the UNFCCC, the development of two national communications and a NAPA, the project, through component 1, seeks to strengthen the individual, institutional and systemic capacities of actors in land management.

In addition, by developing the capacities of local government, the project supports the implementation of national government's Decentralization Plan, now in its third phase of implementation. The decentralization plan includes plans to develop new District Pilot Plans for Communal Development that integrate the climate change dimension in local development. The GCF project will greatly contribute to this strategy by developing local capacity and

knowledge, as well as more directly by drafting priority local action plans on climate change that can be integrated into the District Pilot Plans for Communal Development. This will further ensure the sustainability and replication of the GCF project results. In addition, the central government plans, through the Local Elected Representatives Association (AEL) and the Parliamentarian Network on the Environment, to facilitate the replication of results from such project as this, and to integrate best practices into the country's national development policies, strategies, plans and budgets.

E.2.4. Potential for knowledge and learning

Describe how the project/programme contributes to the creation or strengthening of knowledge, collective learning processes, or institutions.

Knowledge management is based on an information and communication system enabling the collection of information data, their storage and sharing through the networking of various actors following a one-to-one process. It builds on various materials and tools for information, training, education and communication which are summarized through:

- Institutional communication with institutional partners to facilitate information collection, storage (in viable structures) and exchanges among them;
- Education communication based on the training of technicians and education of communities; and
- Social communication to allow a large diffusion of climate information for behavioural change and the data provision by technicians and populations to populate the database.

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

Describe environmental, social and economic co-benefits listed above, including the gender-sensitive development impact. Examples include:

- *Economic co-benefits*
 - *Total number of jobs created* 2,840
- *Social co-benefits*
 - *Improved access to education* 7,680 persons
- *Environmental co-benefits*
 - *Improved soil quality* 50,000 ha
 - *Improved biodiversity* 1,200 ha
- *Gender-sensitive development impact*
 - *Proportion of men and women in jobs created* 50 % men ;
50% women

Economic co-benefits:

The project will contribute to the **creation of 2,840 direct jobs** related to salinized land management through: the consolidation of production activities on poorly affected lands by securing salinized land tenure or creating new jobs related to salinized land management. Appropriate technical and technological packages (adapted seeds, adequate farming techniques, production inputs, equipment, etc.) will be provided for improving production and creating new employment opportunities. Fifty per cent of men and 50 per cent of women are estimated to benefit from these jobs in order to comply with the gender dimension of the project.

The project will also contribute to the **training of 2,560 people** in cascade who, in their turn, will each train at least three others which gives a total of 7,680 people over the four years. This cascade training includes capacity strengthening of relay farmers that were selected in villages who will deliver continuous training of farmers in their own and nearby villages.

As a whole, agriculture is the primary productive activity as it employs most of the workforce in areas where land salinity is the major constraint, any improvement in production techniques and technologies will favour producers' training and the creation of jobs for the majority of population.

Environmental co-benefits:

Reforestation, land-use management and soil structure improvements (i.e. mulching) to be carried out across the project area will improve soil structure as a means of reducing the conditions of environmental degradation, such as low soil organic content, contributing to salinization. The planted areas will contribute to the densification of vegetation cover, soil fixation as well as attain mitigation co-benefits through potential carbon sequestration. All these activities will enhance the protection of several hectares of land in the project area and foster rainwater infiltration to help to feed the underground aquifers and reduce leaching, another cause of salinization. Through mangrove planting, the project will participate in efforts to combat coastal erosion and reduce saltwater intrusion into productive lands, and increase fish habitats. In addition, the project will increase water availability through the building of water impoundment structures that will increase water availability and reduce water stress.

Social co-benefits

The positive impacts on the local population's living conditions include: increase in revenues from the marketing of vegetable products (vegetable production, livestock, salt, etc.) helping to pay for costs related to children's education, clothing, drug purchase, etc.; improvement in the nutritional value of diets through diversification; longer flooding duration of ponds facilitating livestock watering and reducing pressure around boreholes and wells, and conflicts between farmers and herdsman.

The revival of agropastoral productions and/or creation of new income generating activities like vegetable production, fish farming, salt extraction to generate additional jobs to ensure both food security and sustainable income creation for local communities, particularly the vulnerable ones.

In terms of gender, the project includes a number of specific activities focused on bringing women into leadership roles in decision-making through the local consultative committees, thus ensuring that adaptation strategies meet the needs and further the role of women in society. Their leadership across different project activities, particularly in land management activities will also be promoted. Specific income generating activities have also been included in component 3, valuing the role of women in small business development. Moreover, women's participation in activities such as reforestation, vegetable production, and agro-pastoral activities will be enhanced.

E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

Describe the scale and intensity of vulnerability of the country and beneficiary groups, and elaborate how the project addresses the issue (e.g. the level of exposure to climate risks for beneficiary country and groups).

Vulnerability: events and threats

The ecoclimatic vulnerability of Senegal is almost structural due to its geographic position (700 km of coastline with differences among the interior regions) and its climate (Sudano–Sahelian with a high seasonal variability of rainfall and temperatures).

The country's vulnerability is seen at various levels and affects all of its natural resources:

- Climate variations: projections of warmer temperatures by about 2 to 4°C, receding cloud cover by 5 to 10 per cent and a sharp rainfall decline of between 5 and 25 per cent were made (Gaye 1968; Malou *et al.*

1999);

- Water resources: the sharp decline in rainfall due to drought results in reduced surface water potential and an almost systematic resort to groundwater causing its overuse thus leading to saltwater intrusion and land salinization which poses a real threat to the country's high annual potential of 35 billion m³ (Malou *et al.* 1999);
- Health: the ecoclimatic environment favours the resurgence of various diseases such as malaria, which is the leading cause of morbidity and mortality in the country, waterborne diseases like schistosomiasis, filariases, etc.;
- Coastal areas: these areas are severely hit by coastal erosion mainly due to the rising sea level (evaluated at 1.4 mm per year from records of the Dakar tide gauge (Elouard *et al.* 1977; Emery and Aubrey 1991) with strong swells resulting in strong sea encroachments into lands (with an average of receding rates of about 1 to 2 m annually in sandy areas and over 100 to 150 m annually in extreme events such as the breakdown of Pointe de Sangomar (Diarra 1999), rivers and soils;
- Agriculture: mainly rain-fed, it suffers heavily from the influence of climate events through rainfall decline by about 35 per cent and erratic rainfall distribution (later start and shorter rainy season – Diagne 2000). The rising temperature trend associated with rainfall decline results in falling yields as well as agricultural, forest and pastoral production, posing a real threat to the resilience of agro-sylvo-pastoral ecosystems, local community survival and the economic development of the country which is heavily dependent on the primary sector; and
- Extreme events are also noted like flooding which is almost recurrent in cities and villages, seawater intrusion, off-season rainy spells (Heug 2002) with their share of environmental and human disasters mainly with: 18 per cent losses in cereal production, 5 per cent of cattle mortality, about 85 per cent of severely affected households (see the National Social Protection Strategy).

However, the most pernicious and enduring threat remains the evolution of the salinization front, resulting from climate hazards which increased salinized lands in Senegal and more specifically in river-sea areas and interior lands in the region of Fatick, the project intervention area.

The increased size of salinized lands resulted in: the reduction of farmlands by about 45 per cent; decline in yields and production; pollution of fresh aquifers prompting food insecurity; lowering incomes of populations; a growth deficit for a country for which the economy is essentially based on agriculture.

Land salinization has among other consequences :

- ✓ At the individual level: a loss of jobs due to the abandonment of large areas of lands that have become uncultivated and to rural exodus particularly of young people further emptying the countryside and compromising the future of rural youth;
- ✓ At the household level: family break-up due to exodus and emigration, but also definite feminization of the workforce, contributing to increasing heavy work performed by women and their workload. Nowadays, there are more and more rural women heads of households (in the absence of men either temporarily or more permanently), which was relatively rare in the past. The number of women heads of households is estimated at over 20 per cent – according to the last census in 2012; and
- ✓ In agro-sylvo-pastoral communities: a shift from traditional production activities and a loss of traditional ethno-scientific knowledge and know-how, which still remain valid in many respects. Indeed faced with the degradation of their environment due to climate change and the delay of response from the research-development community, the population uses alternatives that have so far helped it to often maintain a minimal production.

The project will contribute to technically boosting agro-sylvo-pastoral activities (for their continuation and

development) and enhancing their contribution to the economy (through the development of value chains involving all socio-professional categories of the sectors considered). Thus, the project will contribute to rehabilitating individuals through the consolidation and or creation of green jobs pertaining to the revival and/or creation of new productive activities. The existence of in situ employment and income will help socially and economically to secure households and promote gender equity by occupying both women and young boys in implementing the productive activities which will need all available labour. The improved production, consumption and income resulting from these measures will contribute to achieving food security and improving the living environment and standard making the countryside more attractive for grass-roots communities and allowing better land development (fight against rural exodus, aim for better wealth distribution between the cities and the countryside, etc.).

The choice of intervention sites of the project addresses this concern. Indeed, the districts of Fatick and Foundiougne are among the areas where salinity is the highest in the country. Yet, at the same time, they are among the country's leading producers of cereal (staple food) and groundnut (cash crop by definition). Moreover, despite the constraints of salinity, vegetable production is increasingly developing here.

Therefore there is a real production potential in this area which requires only to overcome the barriers and constraints related to salinity for further development. The ultimate goal is indeed to make it one of the country's breadbaskets and to strongly contribute to achieving food security and growth as laid out in the PSE (Senegal Emerging Plan) goals.

E.4.2. Financial, economic, social and institutional needs

Describe how the project/programme addresses the following needs:

- *Economic and social development level of the country and the affected population*

The project will contribute to developing new technologies more adapted to climate change and therefore more productive for the restoration of salinized lands and improvement of their fertility. In doing so, it will guarantee productivity so as to secure household consumption, ensure an income level, provide benefits to women and youth in the country by enabling access to recovered lands, and develop related activities in the production sector (green jobs). At the macro socioeconomic level, the project will strengthen the country's food security, reducing imports even increasing exports (especially for vegetable and fruit-growing areas which are severely hit by salinity), and therefore improve the country's trade balance and foster improved living standards and the environment. This improved macroeconomic environment can trickle down to other important economic gains in social sectors such as education and health.

- *Need for strengthening institutions and implementation capacity*

The project will strengthen the capacities of institutions such as the technical structures and local communities that are major actors in the project implementation. The project will provide support through:

- Training on the most appropriate adaptation technologies;
- Material and logistic support in implementing the activities;
- Strengthening local communities' capacities to plan environmental issues and in the legislative and regulatory fields related to climate change;
- Enhancing the communication means in order to facilitate the creation of a network for disseminating climate information among various users; and
- Strengthening private sector capacities to address work completion operations.

Through this partnership approach designed to reinforce gains and complement other stakeholders' actions, the project will ensure its ownership by these measures and guarantee the sustainability of actions and their replicability by empowering the actors responsible for its takeover.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

Please describe how the project contributes to country's identified priorities for low-emission and climate-resilient development, and the degree to which the activity is supported by a country's enabling policy and institutional framework, or includes policy or institutional changes.

The project objectives and activities are in line with the strategic objectives of the National Strategy for Economic and Social Development 2013-2017 (SNDES⁷ in French) through its 3 priority axis⁸ and to the 3 pillars⁹ of the PSE 2014-2018 (Plan Senegal Emergent¹⁰). The 3rd Axis of the SNDE put a particular emphasis on Women Empowerment. The PSE which is currently the overarching strategic development framework put emphasis on the development of agriculture (under Pillar 1); the development of human capital, the reduction of populations vulnerability due to climate change adverse effects and preserving the resource base and environmental services they provide (under Pillar 2); and local empowerment (under Pillar 3). They are also aligned with the objectives of the Policy Statement of the Fisheries and Aquaculture (LPS-PA¹¹) Sectors which aims, inter alia, the development of inland fisheries and aquaculture. The project activities contribute to the objective of the LOASP (Loi d'Orientation Agro-Sylvo-Pastorale¹²) which aims to increasing the contribution of the agricultural sector to the economic and social development. Through activities under Components 1, 2 and 3, the project resources will contribute to strengthen the institutional and strategic framework, create an enabling environment, diversify the productions, facilitate access to inputs, build conservation facilities, strengthen food security and provide producers with trainings and organizational development support. All of this will contribute to creating an integrated development of rural economy, the promotion of gender equity and equality and a sustainable development. This should result in reducing the vulnerability and improving productions and productivity of key productive sectors (agriculture, herding and fisheries) which are among the objectives of these strategies.

The project considers the objectives of the "2013-2017 Five-year Agricultural Programme" (PAQ in French) which aims to ensure food security and improve rural living conditions by creating incentivizing conditions for rural populations to live, work and stay in their community. The PAQ is structured around five major pillars including "the issue of farmlands" this project is looking to protect and preserve.

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

Activities under this project will contribute to the overall objectives No 1 (Maintain existing natural and archaeological heritage and restore degraded areas) and especially No. 3 (Promote eco-development activities for populations in

⁷ National Strategy for Economic and Social Development

⁸ Axis 1: Growth, Productivity and Creation of Wealth; Axis 2: Human Capital, social Protection and Sustainable Development; and Axis 3: Governance, Institutions, Peace and Security

⁹ Pillar 1: Structural transformation of the Economy and Growth; Pillar 2: Human Capital, Social Protection and Sustainable Development; and Pillar 3: Governance, Institutions, Peace and Security

¹⁰ Strategic Plan for Senegal's Emergence

¹¹ Lettre de Politique Sectorielle Pêche-Aquaculture (Sectoral Policy Letter for Fishing and Aquaculture)

¹² Agro-Sylvo-Pastoral Orientation Law

the RBDS) of the Integrated Management Plan of the Saloum Delta Biosphere Reserve. Expected results of this management plan include: "strengthening conservation and management measures of the RBDS areas", "mitigation of natural factors of environmental degradation (drought, salinity)", "strengthening organizational and mobilization capacities of village communities and local institutions" and "improving the living conditions of local populations through the implementation of income-generating projects".

E.5.2. Capacity of accredited entities and executing entities to deliver

Please describe experience and track record of the accredited entity and executing entities with respect to the activities that they are expected to undertake in the proposed project

The project implementation builds, through cooperation with many institutions, an implementing entity and three implementing partners.

- **CSE** is the implementing entity with extensive experience in the management of projects for climate change adaptation in collaboration with the Adaptation Fund. Moreover, CSE has been co-opted by the Adaptation Fund as the implementing entity of climate change projects. Finally, CSE enjoys a proven technical expertise as well as administrative and financial procedures recognized worldwide (e.g. the GCF) and nationally for autonomous project management;
- **INP** is a national body specialized in land evaluation and management in general and in salinized lands in particular. It operates in the field with its regional centres located in the country's various agro-ecologic zones. It conducts studies and experiments in conjunction with the research and technical development structures which helped it to develop several technologies on salinized land management. Its expertise and experience recognized in this field will provide the project with a technical and technological package for direct and easy use to be scaled up; and
- **RADI** is an NGO that conducts many local development initiatives, especially in supporting grass-roots communities for promoting climate change-resilient activities. It could therefore provide a significant contribution to the project in social marketing, economic improvement of developed productions, educative (information, training), organizational and managerial capacity-building thus promoting a dynamic local entrepreneurship.
- **IUCN** is very active in environmental and natural resource management, especially in the field of climate change where it implements various projects in the GCF project intervention area. It has developed various technical and technological tools which serve as good practices that the project could use and scale up. Furthermore, IUCN has a large network in the various decision-making structures which it can provide to the project as part of the institutional strengthening mainly with advocacy, communication, climate change mainstreaming in local planning documents, etc.

The activities of these institutions are complementary and in perfect synergy through: (a) CSE supervision to ensure project compliance with the strategic directions and management requirements of the GCF; (b) the promotion of an institutional, legal and communication framework conducive to the project implantation by strengthening the institutional and strategic capacities via IUCN; (c) the development of technically adapted and financially accessible technologies through INP strengthening of the technological capacities; and (d) the economic enhancement of the project area through the development of activities with high added value with RADI strengthening of individual and collective capacities. All these considerations are guarantees for completing the project goals, achieving the expected results as well as the sustainability and replicability of the activities.

These institutions will collaborate in project implementation. The programme of activity will be divided into three technico-financial components with each managed by an executing agency, pursuant to a memorandum of understanding signed with CSE. Programmes will be defined in common with the identification, for each activity, of the institutional, technological and socioeconomic components that will be divided according to the tasks to be fulfilled among the institutions responsible for these components. Thus, the programmes will be better managed and activities entrusted to each entity in relation to its well-defined skills and responsibilities. The resources necessary for the specific implementation of each task will be allocated to the structure responsible for the completion, without prejudice to the common or cross-cutting tasks that will be directly managed by the CSE. This management mode

will help to provide the necessary autonomy to each structure for fulfilling its share of responsibility while supervising the direct monitoring of activities by the implementing entity, CSE, which then can: (a) exert control before and after implementation, (b) provide support – advice in due course, and (c) provide when necessary, the corrections to redirect activities.

E.5.3. Engagement with civil society organizations and other relevant stakeholders

Please specify the multi-stakeholder engagement plan and the consultations that were conducted when this proposal was developed.

Following the CSE accreditation by the GCF, an extensive communication has been made nationally to inform stakeholders about the challenges of such accreditation for Senegal and the procedures for submitting a project. An information letter had been sent to the Minister of Environment and Sustainable Development copied to the national designated authority (NDA). Subsequently, the Minister sent an information letter to the President of the Republic. CSE also held a workshop chaired by the Executive Assistant of the Minister, and attended by various actors (including technical services from various sectors, local communities, NGOs, academia, private sector), during which the GCF was presented as well as the modalities to access its resources.

A large number of project ideas were then submitted requesting financing from the GCF. All requests received were publicly evaluated and ranked, and only after this process, was this project selected. It was presented to the NDA, who, after discussing with the project holders, and insuring that the project goals and activities are in line with the national priorities as defined within the NAP and other related documents, encouraged the continuation of the process. Indeed, awareness at the highest level of the Senegalese State of the consequences of land degradation in general and salinization in particular on food security has led to the drafting, over the last few years, of a CNIS/GDT¹³, endorsed by the Senegal Academia of Science.

The formulation of the concept note (project idea) was the result of a broad participatory and inclusive process involving all stakeholders, that is, the central government (Ministries), local communities, the projects and programmes that are active in their field of activity, research institutions, the technical structures, the technical and financial partners such as IUCN, grass-roots communities and their organizations, NGOs, etc.

A project writing workshop according to the ZOPP participatory method was held over four days bringing together the various stakeholders to help to confront ideas and it resulted in the use of a consultant to support the elaboration of a consensual concept note that was subsequently selected from 15 projects by a reading Committee with the climate change focal point approval. The participatory approach to the project formulation was pursued in drafting the full project with the support of a consultant. In addition to the various technical meetings organized around CSE between the implementing partners of the project, field visits were organized in the districts of Fatick and Foundiougne in order to update the project baseline through the following: (a) the identification of projects and NGOs operating in the area; (b) determination of the constraints and limitations related to climate change mainstreaming; (c) evaluation of implemented activities; (d) definition of the needs for strengthened capacities to address climate change by stakeholders; and (e) the share of the contribution of each stakeholder to the project effort to adapt to climate change.

These initiatives helped to collect, analyse and process information making it possible to ensure that the activities planned under the project are fully in line with the populations' expectations. The project holders were also endorsed by the local authorities. In addition, it should be noted that the NDA was regularly informed on all steps of the submission process and associated with the interactions with the GCF Secretariat.

¹³ Cadre National d'Investissement Stratégique pour la Gestion Durable des Terres (*Nation Strategic Investment Framework for Sustainable Land Management*)

In the implementation of the full project, the same approach will be pursued to create conditions for project ownership from its start to the final evaluation. The concrete responses to community needs, the lining with national policies and strategies to combat CC, the priorities of development partners are captured in formulating the objectives, the components, the expected results and the activities. Besides these responses, the project anchoring in the viable structures of the State and local communities as well as its collective implementation by implementing partners that have complementary actions are a guarantee of success. The participatory co-management and monitoring–evaluation system involving all stakeholders in the various phases from the design to the implementation of activity and the evaluation of results also contribute to its sustainability.

Stakeholders participation plan

Each stakeholder will provide a significant contribution to the project implementation with the pursuit of its activities in land management (baseline), while benefitting from the project support (by subsidiarity) to implement the commonly agreed project activities.

A detailed participation plan will be developed to define the roles and responsibilities of all the project implementation stakeholders nationally, regionally and locally. The table below lists the expected project stakeholders that will be involved and their role in the project.

Table of the roles and responsibilities of land management actors in the project

Actors	Roles in the project
Technical structures (Directorates, non-NGOs)	<ul style="list-style-type: none"> • Technical partnership with the project/support in training and organizational development of producers
Coordinating committees (COMNACC, the National Committee GDT, etc.)	<ul style="list-style-type: none"> • Coordination/support to the project in integrating climate change in plans and programmes/scaling up the project lessons and experiences
Private sector	<ul style="list-style-type: none"> • Intermediation with local populations • Model farmers for implementing some technologies • Completion of some activities (the <i>faire-faire</i> approach) • Access to new technologies and seed varieties
Local communities	<ul style="list-style-type: none"> • Political, institutional support to the project in activity implementation • Social mobilization of populations and elected representatives around the project objectives
Projects	<ul style="list-style-type: none"> • Coordination with other complimentary projects • Scaling up of the project activities and sharing of lessons learned
Local populations, community-based organizations	<ul style="list-style-type: none"> • Direct or indirect beneficiaries of the project • Role of oversight, ensuring community benefits and social protection
Community radio stations	<ul style="list-style-type: none"> • Outreach and larger scale dissemination of climate information and on the project results/Participation in workshops and forums for disseminating the project results for reporting and documentaries
Research and training institutions	<ul style="list-style-type: none"> • Project direct beneficiaries and major stakeholders with communes/Relays for scaling up the replication of the project activities

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

Describe how the financial structure is adequate and reasonable in order to achieve the proposal's objectives, including addressing existing bottlenecks and/or barriers; providing the least concessionality; and without crowding out private and other public investment.

The project financial arrangement

Financing of the project will be sought from the GCF to bridge the technical gaps and inadequate financial resources in addressing climate change issues by the State and other stakeholders mainly due to the various climate change events and their magnitude. The project financing approach is based on the additionality principle which implies that the project will seek to consolidate the institutional, technical and technological gains (good practices), economic gains (sector-based and value chain approach) and social gain (gender dimension) through the strengthening of stakeholders' capacities by overcoming the barriers to their effectiveness. Thus the inter-sectoral approach (technical level) and value chain approach (socioeconomic level) will be developed by the project so as to assist all public and private stakeholders as part of a participatory and interactive approach.

Please describe the efficiency and effectiveness, taking into account the total project financing and the mitigation/adaptation impact that the project/programme aims to achieve, and explain how this compares to an appropriate benchmark.

The project will contribute both in its life span and in relation to the dissemination and replication of its actions in the reference period of 20 years (2016–2035 in relation to PSE¹⁴) to:

- (a) Improving overall fertility of lands (50,000 ha in total)
- (b) Recovering salinized lands (1,000 ha in total);
- (c) Improving the productivity of salinized lands (by about 50 per cent (in keeping with the results of the PAPIL project); and
- (d) Mobilizing clean water resources for the diversification of productive activities (nature of activities: number of green jobs and anticipated income levels, etc.).

Comparison between the project investment costs estimated at 8,160,260 USD and the economic and financial gains expected from the project gives the following results in terms of costs /benefits.

In terms of effectiveness, the project will promote other adaptation technologies to improve production activities in the evolving climate so as to guarantee a level of production compatible with the needs of grass-roots communities and the country.

These two approaches will be combined into the mobilization of additional resources in land (recovery and restoration), water (run-off recovery and desalination), workforce (job creation or consolidation), financial capital (carbon market and reinvestment in productive activities of the agricultural sector and other related sectors such as industry and trade), and human capital (rehabilitation of vulnerable groups through access to the means of production and reduction of the exodus of women and youth which is an economic and financial benefit), etc.

The number of direct beneficiaries in the project area is estimated at 20,769 out of the population of the six communes (129,804 inhabitants); while indirect beneficiaries include the remaining population of the six communes (109,035). However, owing to extended family and ancestral relationship, inter alia, families and surrounding villages in the project area, up to district level will more or less benefit from the project.

In addition, about 200 private companies or individuals will benefit from the support of production activities (supply of inputs, equipment, transportation of products, marketing, maintenance, etc.)

¹⁴ Plan Senegal Emergent (Plan for Senegal Emergency)

Partnership with the stakeholders cited in the baseline will help to develop activities that will generate co-benefits that can be spread across the project area even all the Groundnut Basin area and Casamance which, combined with the effects of salinized land management performance, will provide a significant contribution to: (a) the achievement by Senegal of self-sufficiency in rice production; and (b) the boosting the country's exports through the development of horticultural production.

In terms of efficiency, the project will promote the use of local technologies and resources combining them, if necessary, with modern adapted technologies. This approach will help to cut the cost of major investment significantly, to pay off investment in a better way by dividing it across the activities and to make sure it benefits from large intervention areas and larger segments of populations (especially as part of the scaling up).

For illustration: Comparison between the construction costs of one kilometer of anti-salt work in local materials and in modern materials such as concrete and iron.

- The anti-salt work done using local materials mobilizes resources such as sand, straw, water, used tires, etc., combined with shrub plantations in order to stabilize the work with a strong use of the local workforce. The estimated cost of such work is: XOF 5,625,000 or USD 11,250 (INP data).
- The modern anti-salt work in reinforced concrete uses, for the equivalent scale: soil from coastal dunes, compacted cement, iron of various sizes and concrete. It also mobilizes a skilled workforce: engineers and technicians in civil engineering, and often machinery (excavators, compactors, etc.). Its average cost is estimated at XOF 24,525,200 or USD 49,050 (data from the PAPIL report).

Therefore, the work in reinforced concrete is about five times more expensive. The financial resources thus spared will be used for better dimensioning and reinforcing the works with local materials while fostering their replication for a larger number of direct beneficiaries (supervised by the project) and indirect ones (nearby villages).

The sustainability of the project investment will be provided at two additional levels: maintenance and replication. It is heavily dependent on the level of involvement of beneficiary stakeholders and their ability to cover the related costs.

- Maintenance of works and equipment :
It will be provided through a direct and indirect financing by the stakeholders who are: the State, local collectives, communities and other direct beneficiaries.
 - (i) **Direct financing:** (a) Under the Priority Action Programme of PSE which is the main document for strategic planning, the Senegalese State has a large budgetary component for the construction and rehabilitation of agricultural facilities. Investments made by the project could benefit from such a programme; (b) local collectives (district and municipal councils) are also responsible for supporting the maintenance of infrastructures built in their territories, in accordance with their prerogatives under Act 3 of Decentralization. These communities were involved throughout the process and therefore are ready to integrate this requirement in their regular budget; (c) local communities have a key role to play because the infrastructures are labour intensive (HIMO) and comprise local materials mainly mobilized through self-supply by the same workforce that facilitates maintenance of the works; (d) the private sector through agribusiness developers will pay royalties to tap into resources from the use of the infrastructures put in place.
 - (ii) **Indirect financing:** Beneficiary populations will be organized into committees to manage the infrastructures in order to better organize their sustainable use but also and above all to provide

maintenance. Taxes on production will be set for beneficiaries and co-beneficiaries of the contribution of infrastructures to fund the work maintenance. These management committees will be organized into subcommittees with specific tasks of supervision, control and management of funds that will be broken down in a budget into two headings: maintenance and investment.

- Replication and scaling up of investments and activities :

The pilot infrastructures built will be more easily replicated due to the availability of the various basic elements which are: the local materials, the well-controlled technology and the workforce comprising local communities. The technical training for completing the production and technological activities (for the construction of works) delivered by the project across the intervention area, the results in increased production obtained in the areas benefiting from the work as well as the involvement of the State supervision structures are guarantees of replicability and scalability of the initial investment made by the project.

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

N/A

Please make a reference to [E.6.5 \(core indicator for the expected volume of finance to be leveraged\)](#).

E.6.3. Financial viability

The funding requested under this project is consistent with the priority thrusts defined by the NAPA, which aims to complement and bolster the initiatives already under way and reflected in the baseline. The purpose is to overcome the socioeconomic constraints as well as the remaining technical and institutional barriers that inhibit possibilities to adopt, scale up and disseminate good adaptation practices within the framework of a sustainable and integrated soil management. Emphasis will be placed on strengthening the individual and collective (information, training, sensitization), institutional (financial, legislative and regulatory, etc.), systemic (policies, plans, programmes, etc.), and still inadequate technical and technological capacities. In doing so, the project will contribute significantly towards the efforts made at the national and local levels by the stakeholders, that is, the State, local communities, grass-roots communities, the private sector, NGOs, etc., to increase the resilience of communities and ecosystems (adaptation).

- *Please describe financial viability in the long run beyond the Fund intervention.*

Under the project, financing by foreign partners will contribute to:

- Improving and upgrading climate change adaptation techniques and technologies with support from research and development institutions;
- Disseminating and scaling up of these techniques and technologies across the project focus areas and beyond;
- Providing technical and institutional support to the State technical structures, communities and consultation frameworks and coordination to strengthen their planning capacities (prevention, adaptation) and the sustainable management of climate events;
- Strengthening the material and financial capacities of local communities to facilitate planning, adoption and application of new technologies that generate green jobs, incomes and create a decent living environment;
- Providing advocacy, information, education and communication for disseminating lessons learned on good adaptation practices, especially on salinized land management at the national, subregional and international levels by building a knowledge sharing network; and

(e) Promoting the national private sector to foster the development of local and national entrepreneurship.

More specifically, the breakdown of the GCF resources will be presented in detail through the project's various components and the budget.

This total project cost over four years is USD 8,160,260, divided as follows:

- GCF project grant USD 7,614,260 in cash financing; and
- Co-financing : USD 546,000 (in kind).

The national implementing entity management fees are not included in this amount.

Please specify the expected economic and financial rate of return with and without the Fund's support, based on the analysis conducted in F.1.

- **Without the Green Climate Fund Financing**

The baseline highlighted various country-level initiatives to address climate change. The economic impact of measures taken has been relatively low considering the magnitude of the land salinization issue in particular. Indeed, the tendency to loss of land and therefore of production, jobs, incomes, etc., was compounded in such a way that some parts in the regions of Fatick and Foundiougne have become real salt deposits with all the consequences of this already mentioned. The financial resources mobilized, therefore, clearly appeared insufficient for the implementation of the proposed measures to eradicate the phenomenon. In addition, resource utilization turned out to be ineffective due to the diversion of efforts in small areas without any real impact on the phenomenon which requires substantial resources and a real coordination of efforts.

- **With the Green Climate Fund Financing**

The GCF project additionality will help to complement the ongoing initiatives through scaling up of good practices already identified with proven effectiveness. The economic benefits will be perceived through various sectors of activities with high added value such as: agriculture, livestock, forestry, agroindustry, trade, etc., with direct and induced effects in terms of production, consumption, jobs, income, revenues, etc., spelled out in PSE.

The financial cost-effectiveness of the project is to contribute to the productive activities and will diversify in order to develop a real value chain allowing wealth creation. The expected gains in financial terms on the lifetime of the project and beyond 20 years corresponding to PSE timeline is at least fourfold the project investment costs.

E.6.4. Application of best practices

Please explain how best available technologies and practices are considered and applied. If applicable, specify the innovations/modifications/adjustments that are made based on industry best practices.

Several effective good practices on salinized land treatment have already been tested by researchers and implemented by the State technical structures, projects and programmes, NGOs and local communities. The project will conduct more systematic and extended supporting activities, further taking into account the climate information for adopting and disseminating the technologies that are most appropriate as they are more effective and accessible, depending on the sites under review. The technical packages thus developed and approved for each soil category by research structures will be disseminated, in collaboration with the technical supervision structures among the various users for effective scaling up and large adoption at the local (project area), national and international levels (dissemination of good practices as part of exchanges). A system for monitoring and evaluation of technologies will be set up to support their dissemination so as to ensure their adaptability and therefore the sustainability of their effectiveness according to climate evolution and effects on the resilience of ecosystems and local communities.

E.6.5. Key efficiency and effectiveness indicators	
N/A	
GCF core indicators	Estimated cost per t CO ₂ eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)

* *The information can be drawn from the project/programme appraisal document.*

F.1. Economic and Financial Analysis

Please provide the narrative and rationale for the detailed economic and financial analysis (including the financial model, taking into consideration the information provided in section E.6.3).

Analysis of the economic and financial cost-effectiveness of the project is based on three key factors:

- ⇒ The economic cost-effectiveness will be measured through various effects:
 - The project contribution to improving the living standards of local communities (households)

The project will contribute to increasing arable lands and farm yields, and to diversifying the productive activities, with the recovery of salinized lands, purchase of production inputs and improvement of production techniques and technologies. The contribution of these new variables will result in increased yields and production for use in consumption and income generation. This has the double benefit of helping to make savings in purchases made on the basic commodity market (self-supply), and to shore up investment capacities (cash productions).

- Contribution to promoting the private initiative (business): job and wealth creation

In its approach based on the *faire-faire* and intermediation, the private sector is a preferred partner of the project which, in addition to the demonstration activities will give priority to skills transfer to producers and their economic and commercial partners. In doing so, it will contribute to increasing the technical and financial capacities of private operators, including both the populations organized into groups and individual private actors with technical expertise to carry out the allocated tasks. The ultimate goal of this approach is to promote real value and wealth chains (job-income creation) involving all the socio-professional categories of a sector so as to promote empowerment and system sustainability.

- The project structuring's effect on the national economy (State)

Increased production results in a significant contribution to food security thus reducing the imports of staple foods, while the diversification of production activities in high added-value sectors like vegetable or tree-growing production, livestock, tree cultivation, amongst others, will help to increase exports. The resulting agricultural sector development (through the revival of productive activities) will have a knock-on effect both locally and regionally with the development of related sectors and agro-sylvo-pastoral value chains underpinning agro-industrial promotion. This double trend (lower imports and boosted exports) will translate in the country's improved trade balance and re-investment of financial gains in the social and production sectors (the project development goals).

As to the project's negative value addition, it remains relatively low in view of the following considerations:

- At the household level, the primary activity that can be compromised by the project action is salt extraction which excludes all other activities (it cannot co-occur with any other activity), employs a rather small portion of the workforce, and provides relatively limited incomes due to strong dependence on professional sales agents;
- At the business level, salt extraction remains a marginal and poorly structured activity which is carried out in a rather closed market involving no more than two categories of sale agents: primary farms (local populations) and traders reducing the impact of the activity on the local economy; and
- At the State level, it is true that the activity ensures self-sufficiency even exports, its macroeconomic impact remains limited by its low contribution in terms of food security, foreign currency and job creation.

The cost-economic benefit ratio of project activity is therefore largely positive due to its positive and structuring effects on the national economy through job and income generation contributing to achieving the project development goals and the emergence of the country in its own right which depends on the development of households and the private sector supported by the public sector.

⇒ **Financially, the cost-effectiveness will be reflected in the financial cost–benefit ratios of the project investment.**

The project operates in the areas of the environment and rural development as well as social and economic advancement. It therefore includes both recoverable products (agricultural production and others) and non-recoverable products (environmental restoration and social costs).

Intrinsic cost-effectiveness of the funding

Recoverable products

To determine the project cost-effectiveness based on the recoverable products, the focus will be placed particularly on vegetable production with high added value (employing most vulnerable groups (women and youth) with an alternative resilient activity) and merchant rice.

Based on yields per hectare obtained by PAPIL in the same area and using the same technologies, we note average productivity gains of 2.5 t per hectare for rice (6,008 t for the region of Fatick in 2014) and 6 t ha⁻¹ for vegetable production.

Out of the 50,000 ha which overall fertility will be improved, we envisage a minimal case scenario of planted area of about 1,000 ha per year for vegetable production and 1,000 ha per year for rice.

Based on an initial production (minimal scenario of 6 t ha⁻¹ for vegetable production and 3 t ha⁻¹ for merchant rice (PAPIL evaluation report), the production would then be:

- Vegetables: 1,000 ha x 6 t/ha or 6,000 t @ USD 600 or USD 3.6 million per year; and
- Merchant rice: 1,000 ha x 3 t/ha or 3,000 t @ USD 500 or USD 1.5 million per year.

Total annual income would be estimated at: USD 5.1 million.

However, with water control, recovery of new lands and increased productivity in addition to a double campaign for the production of rice and vegetables mainly, an even more optimistic scenario can be envisaged, especially as several other productive activities like livestock rearing, fish farming or processing are not considered here.

With the delayed effect of some investments mainly related to land restoration, which is made in the medium or even long term, the expected effects from these investments are likely to be felt further in the replication phase of the project activities. These are non-recoverable investments in the short term just like the social investments planned by the project in addition to those provided in the environmental field the benefits of which will be seen indirectly in other related sectors. It is then possible to expect an economic and financial cost-effectiveness of the project.

Calculating the net value added prior to project financing

The NVA is set at fixed prices regardless of the operating costs. The discount rate corresponding to the opportunity cost of the capital in steady prices is not considered either.

Revenues stand at USD 5.1 billion per year or USD 20.4 million over four years.

The investment is: USD 8.160,260 million.

Description	YEAR 1 (USD million)	YEAR 2 (USD million)	YEAR 3 (USD million)	YEAR 4 (USD million)

Export earnings				
Vegetable production	3.6	3.6	3.6	3.6
Merchant rice	1.5	1.5	1.5	1.5
Total Inflows (a)	5.1	5.1	5.1	5.1
Investments	1.2	1.2	1.2	1.2
Operating costs	0	0	0	0
Total outflows (b)	1.2	1.2	1.2	1.2
Cash flows (a – b)	3.9	3.9	3.9	3.9
NVA	+1	+1	+1	+1

The NVA prior to financing is positive and demonstrates the cost-effectiveness of the investment.

The cost–benefit ratio or annual performance of the invested monetary unit (RUMI) provides a quick, simple characterization of the intrinsic cost-effectiveness but makes sense only if inflows and outflows are steady. Here the RUMI was calculated based on steady inflows and outflows prior to operation (without taking into account any increase in investment and estimated operating costs). However, this gives us an idea of the intrinsic cost-effectiveness of the investment.

Calculating the payback period

Based on RUMI, the payback period is two years.

F.2. Technical Evaluation

Please provide an assessment from the technical perspective. If a particular technological solution has been chosen, describe why it is the most appropriate for this project/programme.

The technological package chosen by the project appears to be the most appropriate in view of: (a) the extent of the climate change phenomenon and the current findings of research and development; and (b) its consequences on the ecological (land salinization), technical (inadequacy of current production techniques against the phenomenon) and economic plans (deterioration of the living conditions of communities). These considerations suggest that the technologies selected by the project should be relevant and effective enough to (a) provide a technical response to land salinization; and (b) provide an economic and financial response to the improved living conditions of communities, promotion of the private sector and improving the country's growth.

Indeed land salinization may be inherent to rainfall decline, but also to rainwater waste by the poor control of water run-off. Better management would allow leaching of soil and reduce the salinity. Technologies to fight against water erosion in the watersheds (valleys) contribute at the same time to water infiltration to lower the saltwater level and leach salty soils. They are complemented by works for the drainage of saltwater, and by the storage of freshwater used for multiple purposes such as agricultural, pastoral lands and fish farming.

To address such an issue, the technologies chosen for the implementation of project activities went through a rigorous selection based on specific criteria:

- Their technical effectiveness identified through research (by ISRA) and development (by INP) in relation to the

magnitude of climate change, to their ecological impact (land salinization) and the inadequacy of current production techniques against the phenomenon;

- Their efficiency due to their relatively low costs against the value added;
- Their availability due to the use of local easily accessible materials; and
- Their ownership a by populations which is strongly involved in their utilization.

The sustainability and replicability of the results achieved is enhanced by selecting technologies that meet these criteria, which is the case in this project.

This is the basis for the selection of the proposed technologies implemented through the project activities, and listed in the table below.

Table of selected technologies

Activities	Selected technologies	Evaluation
1. Promotion tree planting (fodder species on grassy salt flats, etc.)	Use of species available at the technical services (forestry) and research	Costs USD 1,000 ha ⁻¹
2. Development of agroforestry techniques	<ul style="list-style-type: none"> - Use of ANR - Reforestation 	<ul style="list-style-type: none"> - Needs only commitment and mobilization of producers to protect wood species in farms - Use the species available at the technical services (forestry) and research - cost : USD 125 ha⁻¹, USD 60 of which is for the workforce
3. Soil protection against forms of erosion	<ul style="list-style-type: none"> - Framework embankments - Hedges - Weirs - Stone barriers -Mulching film 	<ul style="list-style-type: none"> - Use of local materials (wood, stones, sand, etc.) and local workforce (populations) - Local shrubs and herbs, local workforce ; cost : USD 190 km⁻¹ (including USD 100 for the workforce) - Local materials (branches) and workforce (populations) - Use of local materials (stones) and workforce (populations) cost: USD 530 ha⁻¹ (with USD 280 for the workforce, 57 per cent) - Use of local materials (harvesting, branches, straw, etc.) and workforce (populations)

<p>4. Construction of anti-salt and anti-erosion works</p>	<p>Secondary anti-salt works and frame bunds</p>	<p>- Use of local materials (sand, water, straw, used tires, etc.) and shrub planting to stabilize the works</p> <p>- Local workforce (populations)</p> <p>- Cost USD 11,250 km⁻¹ with USD 5 ha⁻¹ per day and USD 568 of support in equipment to collect construction materials for use in</p>
<p>5. Promoting biosaline agriculture</p>	<p>- Adapted varieties of millet and rice developed by research</p>	<p>Use of salt-tolerant varieties</p>
<p>6. Developing initiatives of soil organic and mineral fertilization</p>	<p>- Mineral fertilization</p> <p>-Organic amendement</p>	<p>- Use of natural phosphate from Senegal (Matam) at low cost (USD 12 ha⁻¹)</p> <p>- Use of compost produced from local materials (animals and plants)</p> <p>- Compost cost: USD 56.5 2T⁻¹ ha⁻¹ (with USD 32 for workforce and transportation)</p>
<p>7. Installation of run-off water impoundments</p>	<p>- Local materials (sand, stones, straw, used tyres, etc.)</p> <p>- Tree planting to stabilize the works</p>	<p>Use of local workforce (populations)</p>

Examples of pictures to illustrate the merits of local technologies and their level of integration and control by local communities.

Local materials proposed to implement these technologies are:

- ✓ Wood and rubble (stones) for filtering bunds and stone barriers; and
- ✓ Clay and straw for secondary anti-salt dikes.

As shown in the figures below, they are accessible to populations and were successfully used in combating the types of degradation concerned.



Fig. 1: Weighing of clay



Fig. 2: Rice straw used



Fig. 3: Mixture of clay and straw in laboratory



Fig. 4: Clay extraction by the populations on the ground



Fig. 5: Mixture of clay and straw on the ground



Fig 6: Use of used tyres to build an outlet



Fig. 7: Construction of a frame bund



Fig. 8: Stone barrier on a plateau slope

Combating water erosion will foster fresh water infiltration thus avoiding salt capillary rise.

F.3. Environmental, Social Assessment, including Gender Considerations

Describe the main Output of the environment and social impact assessment. Specify the Environmental and Social Management Plan, and how the project/programme will avoid or mitigate negative impacts at each stage (e.g. preparation, implementation and operation), in accordance with the Fund's Environmental and Social Safeguard (ESS) standard. Also describe how the gender aspect is considered in accordance with the Fund's Gender Policy and Action Plan.

Compliance of the project with the Green Climate Fund-specific standards on impacts

This project falls under the environmental and social category (C) (meaning activities with minimal or no adverse environmental and/or social risks and/or impacts). Therefore:

- The project will have no direct impact on the allocation and redistribution of lands. Indeed, infrastructures will be built at the request of communities and local authorities, and of national institutions with the mission of managing the sectors considered. The provision of lands required for the project will be made in consultation with beneficiary village communities and local authorities under the State supervision. They will be subject to administrative records duly established at the national level for ensuring the security of the community investment.
- The project will cause no populations relocation or compensation. On the contrary, it will help to better settle local communities in their lands through the restoration and recovery of lands that had been abandoned for their unproductive nature. Furthermore, water control will allow the conduct of production activities in any season, consolidating jobs (by settling populations in their lands), increasing revenues and ensuring some food security;
- The development of the project will have a few negative impacts more or less persistent in the intervention areas, including the breakdown of soil around some of the infrastructures to be built, some deforestation, sampling materials, etc. However, these losses will be largely offset by the facts that (a) the actions meet the needs expressed by the entire local community; (b) accompanying measures will be undertaken to restore degraded environments, in particular through reforestation; and (c) employment and wealth will be created for the benefit of the whole community;
- Vulnerable populations will receive the positive benefits that will enable them to improve their conditions and living standards in relation to their specific needs, through specific programmes developed for their benefit;
- The project will have no negative impact on the cultural heritage of local populations because its action is more in the technical field, which is common to all the local community irrespective of sex, religion or caste. The project will instead develop a gender-sensitive approach which will mainly aim to improve the conditions of both men and women. It is about strengthening their respective capacities in the distribution of the tasks entrusted to them in society and in implementing the project in particular;
- The works built by the project will be scaled taking into account the set goal, the size of the site to be handled, the project life span, the availability of local materials, the mobilization of local workforce and the existing technologies and will be well controlled nationally. A technical feasibility study was conducted for this purpose (see the annexes); and
- Large nationwide and local consultations were organized to ensure project ownership by all stakeholders, particularly at the local level, in contact with beneficiary local communities, local authorities (local communities), the technical ministries that have the mission of managing the sectors considered, the private sector involved in the implementation, etc.

Field investigations showed that several structures are active in the project intervention area for which they serve as the baseline. Stakeholders helped in identifying the constraints and failures and gains in adaptation from the existing documentation and the field achievements of these structures.

The project then conducted further studies to better situate its action in time and space in addition to the baseline.

Thus a preliminary technical feasibility study (see the annexes) was conducted to determine modalities for implementing its planned activities.

During the project formulation and in preparation for its intervention, a baseline environmental assessment (EEI – see details in the annexes) was developed. It seeks to assess the potential positive and negatives impacts of the project and the measures to be taken for improving the positive impacts and mitigating the negative impacts as well as the other necessary supporting measures. It highlighted potential positive and negative environmental and socioeconomic impacts of infrastructure (anti-salt dikes and related works) on the environment and on population social and economic conditions in relation to the future activities of the project in various fields, including:

- The **potential positive impacts** which can be summarized as follows: (a) at the environmental level: increase in water availability with positive impacts on improved biodiversity, replenishing groundwater and improving water quality; (b) at the socioeconomic level: the revival of agropastoral productions and consolidation and/or creation of new activities like vegetable production, fish farming, salt extraction and commercial activities which can generate high value-added jobs also ensuring both food security and sustainable income creation. This will significantly contribute to improving the living environment of local communities, particularly the vulnerable ones; and
- The **potential negative impacts** mostly comprise: some deforestation for the purpose of development works, a loss of habitat for wildlife, soil exposure to erosion, pollution of air through dusts, chemicals and of soils with mineral amendments especially, and noise pollution for populations, etc.

The resulting environmental and social management plan has highlighted the following improvement and mitigation measures:

Improvement measures for potential positive impacts

Summary table of improvement measures for positive impacts

Components	Potential positive Impacts	Improvement measures
Vegetation	<ul style="list-style-type: none"> - Gradual improvement of the biological diversity in the area (reappearance of animal and plant species) - Increased plant cover (reforestation) - Good regeneration of tree and wood species with the replenished water table 	Promoting mechanisms for sound management of natural resources
Water	<ul style="list-style-type: none"> - Greater availability and improved water quality - Replenishment of the water table 	<ul style="list-style-type: none"> - Developing water utilization rules - Setting up the management committee
Soil	<ul style="list-style-type: none"> - Recovery and protection of salinized lands 	<ul style="list-style-type: none"> - Associating systems to combat salinity
Wildlife	<ul style="list-style-type: none"> - Rehabilitation of housing, land and avian fauna which is particularly rich and varied 	Reinforcing protection actions
Populations	<ul style="list-style-type: none"> - Increased incomes - Improved nutritional value of diets - Shorter working time for women - Wood availability - Integrating women in the local economic and social fabric 	<ul style="list-style-type: none"> - Strengthening the capacities and promoting the development of income-generating activities -Capitalizing on the time saved in the sensitization or in capacity-building in

		<p>specific areas</p> <ul style="list-style-type: none"> - Putting in place a system for the sound management of wood resources - Strengthening women's capacities in the areas of vegetable production, marketing, access to land and income-generating activities
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Summary table of mitigation measures of negative impacts

Components	Potential negative Impacts	Mitigation measures
Construction phase		
Vegetation	- Deforestation	- Compensatory reforestation using the same species as much as possible
Wildlife	- Loss of habitats in particular for birds (noise)	- Compensatory reforestation and rehabilitation
Soil	<ul style="list-style-type: none"> - Destabilization of the soil structure (exposure to erosion) - Exposure to pollution through accidental spills of hydrocarbons 	<ul style="list-style-type: none"> - Reforestation to combat erosions and rehabilitation (levelling) - Developing a watertight system for hydrocarbon storage
Air	- Emissions of dust and smoke from machines near the inhabited areas	<ul style="list-style-type: none"> - Watering and compacting the trucks crossing roads - Covering of dump trucks for the transport of materials
Population	<ul style="list-style-type: none"> - Noise - Air pollution caused by dust - Potential conflicts related to local workforce recruitment 	<ul style="list-style-type: none"> - Using machinery in good condition and working outside rest hours - Watering and compacting the trucks crossing roads - Enabling consultation with local populations
Operational phase		
Vegetation	- Conditions of suffocation that can cause tree loss	- Developing a waterworks control system (regulation of the water table)
Water	- Contamination by farm inputs (chemical fertilizers and pesticides)	<ul style="list-style-type: none"> - Promoting natural fertilization techniques (composting, using organic manure, etc.) - Consulting with users and sensitization on the practice of an

	<ul style="list-style-type: none"> - Proliferation of waterborne diseases vectors - Production of solid and liquid wastes that cause soil and water pollution. 	<p>environmentally-friendly agriculture</p> <ul style="list-style-type: none"> - Treating of water bodies (disinfection) - Developing a system for managing solid and liquid waste
Population	<ul style="list-style-type: none"> - Resurgence of waterborne diseases - Conflicts between farmers and herdsmen - Reduced water access for the cattle 	<ul style="list-style-type: none"> - Measures to control waterborne diseases (information and sensitization) - Building an IEC (information education communication) programme - Setting management rules (local conventions) - Providing rangelands for greater access to water points
Livestock	<ul style="list-style-type: none"> - Transmission of diseases especially zoonosis 	<ul style="list-style-type: none"> - Supporting the veterinary service for health monitoring of cattle

Supporting measures and environmental and social monitoring plan

In complementarity to the necessary supporting measures, the environmental and social management plan of the project will address the various improvement and mitigation measures mentioned above, including:

- An operational search for evaluating the nature and extent of the positive and negative impacts to provide appropriate improvement and mitigation measures, respectively, at each stage of the implementation process;
- Refinement and adaptation of the project intervention strategy so as to integrate the appropriate mitigation and improvement elements in its annual action plan as well as environmental and social monitoring elements in its monitoring-evaluation system; and
- The selection of actions to be taken and resources to be mobilized according to their impact and mitigation or improvement measures likely to effectively contribute to the sustainable management of the adverse effects on the environment as well as to the populations' living environment and standards.

During its implementation, the project is looking to develop an environmental and social impact assessment to extend and complement the EEI for better environmental and social monitoring of its action and to make the necessary corrections through its management plan.

As part of additionality, the project complementary action to other partner projects and programmes mentioned on the baseline, such as PAPIL which built some infrastructures in the area, could also seek to address some technical and technological, institutional and organizational, educational and communicational supporting measures, in planning, etc. It mainly includes: (a) restoring and maintaining the soil fertility with the adoption of water and soil conservative techniques; (b) protection of upstream glacis or plateau areas against gully and erosion; and (c) protection of downstream lowlands against sedimentation and silting. In doing so, the project will contribute to improving the physical and socioeconomic environment in the area for a more comprehensive positive impact on the environment

as well as on the economic and social living conditions of the populations.

Gender and development

The gender issue remains ever present in the project approach. The problem of soil salinization, particularly of productive agricultural lands, affects women and men differently. Women cultivate 70 per cent of land and account for 80 per cent of agricultural outputs. With the persistence of land salinization, agricultural outputs and incomes are reduced and hence alternative sources of incomes such as home gardens and other livelihood activities become important. The decreased land productivity also results in rural exodus, mostly of men going to cities to work, leaving women to become heads of households.

Indeed, this social category is the primary and most active and responsive workforce, while it remains strongly marginalized in the access to production means and responsibilities. The project gender approach therefore is mainly twofold: (a) equitable access of women and men to production means, including land, training, financing, etc., and to collective and community decision-making centres; and (b) the distribution of roles and responsibilities in production between men and women. It is understood that the project has no intention of challenging frontally and immediately the age-old social rules governing the life of local communities for fear of rejection and tensions because such a gender process should run over time. Still the project will contribute to reducing this barrier by applying participation criteria and procedures marked with positive discrimination.

The project will take various initiatives under the traditional activities where women usually have the upper hand such as food through the *cultures de case*, small breeding, small daily or modern and new expenses such as: vegetable production, fish farming or even the processing of local products.

- The revival of traditional production will be made through the supervision of *cultures de case*, small breeding and trade. Some 200 women will benefit from the support of the project which will also mobilize about XOF 50 million (USD 25,000) to support commercial activities for the economic valorization of local products; and
- The development of new income-generating activities is often left to women: (a) vegetable production with the construction of about 10 perimeters equipped with resources for dewatering and production inputs allowing production to reach high yield levels; (b) fish farming with the development of five fish farms; and (c) the setting up of local product processing units with high added value, etc. (see C3). These new resilient activities have the benefit of contributing to food security due to the continuous production activities and of providing significant income to increase women's purchasing power.

The end goal of such initiatives is to enhance women's purchasing power thereby to foster their rehabilitation in local decision-making structures through their greater involvement in the production and exchanges. Indeed, they make up most of the workforce and therefore are essential in implementation processes of the project activities. This project approach is also inconsistent with the current approach by public authorities to make women the driving force for economic revival with their apex organizations at all levels (national, regional and local) and with State investments to reduce their heavy chores and ensure their social promotion. (See the Emergency Community Development Programme – PUDC and the women's advancement funds).

Expected environmental and social benefits (at the international and national levels)

The project expected benefits are twofold: environmental and social.

❖ At the national level:

The project will contribute to improving knowledge on salinized lands and developing appropriate mechanisms for adaptation in general and salinized land management in particular. Thus, good adaptation practices will be disseminated among users in in the various eco-geographical areas of the country. It will thus favour:

- (a) Water control which remains the most decisive factor because of its impact on improved production

mainly of food (and so of consumption) with the improvement of the fertility of 50,000 ha of lands, and the recovery of 1,000 ha of salinized lands.,

(b) Improvement of food security during the long bridging periods through better management of food stocks with the opening of 20 warehouses;

(c) The creation and/or consolidation of over 2,840 direct green jobs and about 10,000 indirect jobs related to the rehabilitation of traditional farm activities and the creation of new activities such as vegetable production, fish farming, among other things, to curb the exodus of youth and women from the area;

(d) Increase in the added value of local products through storage, processing and marketing with the opening of stores, processing units and the development of value chains;

(e) Increased revenues resulting from greater productivity and diversification of production activities estimated on average between USD 500 and 600 per ha for rice and vegetable production, respectively, and also for fish farming and trade;

(f) An improved level of education and training of over 7,000 people benefitting from the project's direct and indirect supervision;

(g) Strengthening the self-financing capacities of producers and the private sector as well as their credit access which so far has been one of the major obstacles to the development of local initiative which represents a guarantee for sustaining the financing and therefore the sustainability of activities;

(h) Improved food and nutrition which is a basic condition for increasing the productivity of the workforce mainly comprising women and youth;

(i) Promotion of saline land management in areas where restoration is impossible providing sources of relatively high incomes to women who often make up the primary workforce. Surveys conducted in farms and local communities show that some areas of activity, although marginal, generate income of about USD 120 per month for the workforce mainly responsible for handling the equipment; and

(j) The organization of producers into cooperatives (seven in the project main sites) in order to promote the development of value chains through the creation of a critical mass of producers allowing professional relationships with other sales agents to establish and to build its negotiating and trading capacities. These cooperatives will also help to expand the project targets, spread its products, effects and impacts more quickly, and facilitate the scaling up of the project activities through umbrella organizations.

These benefits from the project at the local level will have a knock-on effect on other economic activities mainly related to the development of sectors and value chains thus contributing to attaining the PSE goals in terms food security, agro-industrial development, etc. It is the case that the development of rural private entrepreneurship has taken place with the promotion of the local craft industry for the repair and maintenance of equipment and infrastructures, of small local businesses for processing local products with the project support (especially women), as well as the development of related commercial activities. Moreover, due to the key nature of agriculture in Senegal contributing over 20 per cent of the national GDP also employing about 70 per cent of the workforce and faced with the scale of the land salinization phenomenon, the project's indirect contribution will be more significant.

Other socio-environmental benefits expected from the project include:

(a) Rehabilitation of the agricultural and forest biodiversity with water control and the development of new climate-resilient seeds;

(b) Creation of a micro-climate enabling the development of crops the production of which had been compromised due to the regulating effects of the hydro-agricultural works; and

(c) Building a climate management culture incorporating climate information in the operation and management practices, etc., ultimately the project seeks to integrate the climate input in the technical and technological packages of the various productive activities and to favour a genuine climate adaptation strategy that is consistent with the approaches of COMNACC and COMRECC.

As an illustration, the project's direct positive impacts can be measured through improved yields in the two staple crops in the area, that is, merchant rice and vegetables. Productivity rates above 20 per cent are estimated on rice and vegetable production up to 2.5 t ha⁻¹ and 6 t ha⁻¹, respectively, for respective income gains of USD 500 and 600 per ton, corresponding to an average household using 1 ha of rice and 0.5 ha of vegetables to yield respective income gains of USD 500 and USD 300; or for a double crop a cumulated maximum amount of USD 1,600 per year.

Such gains compared to the project area are estimated for beneficiaries at:

- Vegetables : 1,000 ha x 6 t/ha, or 6,000 t @ USD 600 per tonne, or USD 3.6 million per year;
- Merchant rice: 1,000 ha x 3 t/ha or 3,000 t @ USD 500 per tonne, or USD 1.5 million per year.

Total annual incomes would then be: USD 5.1 million.

❖ **At the international level:**

Lessons learned from sustainable salinized land management will be disseminated at the subregional and international levels in countries facing the same issues in a bid to promote good practices and effective mechanisms against climate change globally, in accordance with the guidelines of the UNFCCC and NAPA.

F.4. Financial Management and Procurement

Describe the project/programme's financial management and procurement, including financial accounting, disbursement methods and auditing.

The project will be managed according to the direct execution modalities (DEX). The CSE Procedural manual will be used. The project will be subject to CSE accounting rules according to a monitoring–control mechanism before and after project completion. Based on the approved budget and the annual workplan validated by the steering committee to which CSE and the project implementing partners belong, quarterly cash advances are put in place. The financial execution will be performed by the implementing partners who will submit for double-check quarterly execution reports with supporting documentation to UCP and CSE that is tasked with project supervision, prior to mobilizing any new request for funding. An annual audit will be carried out at CSE request by a private consulting firm selected through tender.

The choice of private companies will be made through tender. The procedures used will be those described in the Procedural manual of CSE and the procurement commission will be set up to ensure compliance with all procurement procedures. Bids will be evaluated by a technical commission appointed according to the procurement specificities. Final approval of the choice made after the tender will rest with CSE with support from a design (or control) office. Dismissal of any choice by the latter should be motivated.

CSE has already suggested that the executing entities anticipate the managing of the project funds by opening dedicated separate accounts. These accounts will be subject to regular and unplanned investigations and the monthly bank reconciliations will be checked. CSE uses the SYSCOA/OHODA system. This system is in force in the WAEMU countries (SYSCOA) and ECOWAS (OHODA) and system meets the standards of the International Federation of Accountants (IFAC).

Disbursements to implementing partners will be made in local currency (XOF). However, reports to the GCF will be made in foreign currency (USD). The exchange rate to be used will be the exchange rate on the first receipt of funds (for signature). This rate will prevail until the end of the project and necessary adjustments will follow.

Applications for funding will be made quarterly, based on the supplied and approved reports and the amounts planned for the following quarter. Spot checks will be made, bank reconciliations will be submitted before the 10th of each month and each quarter, supporting documents will be submitted for verification and approval.

A period of 10 days is given to implementing agencies for the provision of technical and financial reports at the end of each quarter.

After approval of the technical and financial reports, CSE has a period of seven days in which to make available the next disbursement. Disbursements depend on both technical and financial reports and audits conducted.

The steering committee is the forum for exchange between the implementing agencies and CSE. Any current or potential problems, difficulties encountered, expected support, reporting, enforcement, auditing, etc., will be discussed at meetings of the steering committee.

Project funds will be managed by the authorities (leaders) of the implementing partners and the Managing Director of CSE. At CSE and IUCN there is a system of co-signing between the Managing Director and the Head of Finance.

At the end of each year an auditing firm of international standing will be recruited. The firm will be responsible for auditing all project funds (among implementing agencies and CSE).

The standards used in the audits' missions will be generally accepted in the profession, including IFAC standards.

G.1. Risk Assessment Summary

Please provide a summary of main risk factors. Detailed description of risk factors and mitigation measures can be elaborated in G.2.

Implementing such a project which focuses on technical and technological innovations may face some barriers and constraints that may compromise the achievement of its objectives and results. The main risks include: (a) insignificant mobilization of the resources necessary for the adoption and particularly the dissemination of good practices thus limiting the project's impact; (b) communities' reticence to adopt new technologies that demand working time and capital in areas where poor populations often live; (c) the lack of involvement of research – development structures which often cite the lack of resources to provide a significant contribution; (d) the cases of force majeure with unexpected climate disruptions such as droughts (high saltwater intrusion) or strong seawater encroachments, (e) poor availability of climate information to establish adequate forecast and adaptation programmes; (f) the most intense consequences of climate change and their impacts on activity programming and the work dimensioning, etc. A drastic rainfall decline would reduce the leaching of salty soils and accelerate saltwater intrusion thus compromising salinized land recovery. Conversely, the resulting storms and floods may jeopardize the project and compromise investment programmes.

G.2. Risk Factors and Mitigation Measures

Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.

Selected Risk Factor 1

Description	Risk category	Level of risk	Probability of risk occurring
Insufficient financial resources for the implementation of project activities, which would be due to price inflation for materials and equipment and other inputs.	Financial	Medium (5.1-20 per cent of project value)	Medium

Mitigation Measure(s)

Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?

In parallel with the project are ongoing programmes (co-financing), establishment of memoranda of understanding (MOUs) with some stakeholders and suppliers and the development of the *faire-faire* approach and intermediation. In addition, a contingency allocation will be considered in the project cost. The MOUs with stakeholders and suppliers will reflect price agreements that will not increase with inflation.

Selected Risk Factor 2

Description	Risk category	Level of risk	Probability of risk occurring
Producers lack motivation to adopt technologies due to the physical and/or financial investment costs.	Financial	Medium (5.1-20 per cent of project value)	Medium

Mitigation Measure(s)

Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?

Involve all stakeholders by organizing large community consultations, including women, youth, socio-professional

organizations, etc.			
Selected Risk Factor 3			
Description	Risk category	Level of risk	Probability of risk occurring
More intense climate change impacts/poor access to climate information	Technical and operational	High (>20 per cent of project value)	High
Mitigation Measure(s)			
<p><i>Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?</i></p> <p>- Use the climate information monitoring programmes and develop adapted technologies (research–development);- Leverage information from lessons learned.</p>			
Selected Risk Factor 4			
Description	Risk category	Level of risk	Probability of risk occurring
Low consideration of the gender dimension in access to capital and land resources.	Social and environmental	Medium (5.1-20 per cent of project value)	Medium
Mitigation Measure(s)			
<p><i>Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?</i></p> <p>- Target women and youth groups which are the most active workforce and strengthen their technical and financial capacities as relates to the adoption and dissemination of technologies; and - Involve local communities in facilitating access to the sites due to be restored.</p>			
Selected Risk Factor 5			
Description	Risk category	Level of risk	Probability of risk occurring
Conflict between farmers selected to participate in the programme and those who are not.	Social	Medium (5.1-20 per cent of project value)	Medium
Mitigation Measure(s)			
<p><i>Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?</i></p> <p>Establish the selection of beneficiary farmers by involving umbrella organizations, local authorities and technical services, with transparent criteria. Also, the redress mechanisms of the CSE, for which it has been accredited, will be used in the case of conflict.</p>			

Selected Risk Factor 6			
Description	Risk category	Level of risk	Probability of risk occurring
Low consideration of the specificity of salinized lands in local texts (land allocation) and local development plans	Other	Medium (5.1-20 per cent of project value)	Medium
Mitigation Measure(s)			
<p><i>Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?</i></p> <p>Support local communities in elaborating local development plans integrating the climate dimension with the help of COMNACC and COMRECCs.</p>			
Selected Risk Factor 7			
Description	Risk category	Level of risk	Probability of risk occurring
Perpetuation of bad land management practices	Other	Medium (5.1-20 per cent of project value)	Medium
Mitigation Measure(s)			
<p><i>Please describe how the identified risk will be mitigated or managed. Do the mitigants lower the probability of risk occurring? If so, to what level?</i></p> <p>Organize awareness campaigns on best practices in sustainable land management and promote climate information and enhance producers' training on innovative techniques and technologies</p>			

* Please expand this sub-section when needed to address all potential material and relevant risks.

H.1. Logic Framework

Please specify the logic framework in accordance with the GCF's Results Management Framework and Performance Measurement Framework.

Note: Baseline and targets will be confirmed during project initiation

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level ¹⁵						
Paradigm shift objectives						
<i>Choose appropriate expected result</i>	Improve the climate resilience of salinized land ecosystems and communities by restoring the productive bases of salinized lands					
Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Fund-level impacts						
1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities, and regions	1.2 Number of males and females benefitting from the adoption of diversified, climate-resilient livelihood options (including fisheries, agriculture, tourism, etc.)	Monitoring-evaluation reports	Currently about 40,000 persons are benefitting from the adoption of diversified, climate-resilient livelihood options	10,000 more than the baseline (50% women and 50% men) (leading to a total of 50,000 persons)	20,769 more than the baseline (50% women and 50% men) (leading to a total of 60,769 persons)	Alternative livelihoods/activities identified are attractive to the population

¹⁵Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that [some indicators are under refinement](http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf)): http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf.

<p>4.0 Improved resilience of ecosystems and ecosystem services</p>	<p>4.1 Coverage/scale of ecosystems protected and strengthened in response to climate variability and change (in hectares)</p>	<p>Midterm evaluation and final evaluation reports</p>	<p>The baseline in the project area is 27,942 ha of ecosystems, protected and strengthened</p>	<p>20,600ha to be added to the baseline (leading to a total of 48,542ha)</p>	<p>51,800 ha to be added to the baseline (leading to a total of 79,742)</p>	<p>Awareness raising activities foster the population's mobilization for reforestation, mangrove restoration activities, organic amendment, promotion of biosaline agriculture, mineral amendment and rehabilitated salinized land</p>
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H.1.2. Outputs, Outputs, Activities and Inputs at Project/Programme level						
Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Project outcomes	Outputs that contribute to Fund-level impacts					
5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development	5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation	Verification of local development plans	Baseline is zero. CC considerations are still poorly addressed in local development plans	4 local plans are developed and implemented against the project activities	7 local plans are developed and implemented	Drafting of implementation texts related to Phase 3 of Decentralization provides an opportunity to integrate the CC dimension into the new local plans
6.0 Increased generation and use of climate information in decision-making	6.2 Use of climate information products/services in decision-making in climate-sensitive sectors	Monitoring-evaluation reports	The baseline of the project districts is zero. The use of climate information in development activities remains rudimentary	20% of project stakeholders use climate information in their decisions	50% of project stakeholders use climate information in their decisions	Increased awareness of climate change impacts by communities favours greater use of climate information
7.0 Strengthened adaptive capacity and reduced exposure to climate risks	7.1 Development and use of GCF-supported tools, instruments, strategies and activities to respond to climate change	Monitoring-evaluation reports	The baseline is zero. Low capacity to respond	4 tools, instruments or strategies are used by project stakeholders	10 tools, instruments or strategies are used	Capacity-building and outreach activities foster the adoption of tools, instruments and strategies developed by the

	and variability		to climate change and variability	ers	by project stakeholders	project
Project outputs	Outputs that contribute to Outcomes					
Output 1. The CC institutional and knowledge framework is strengthened	1.1. Number of planning documents integrating CC at district and communal (local) levels	Review of documents	No consideration of CC in planning documents at the district and commune levels	15 local conventions and 3 local plans integrating the CC dimension	30 local conventions and 7 local plans	The ever striking signs of CC and their impacts on development are a context enabling awareness-raising by decision-makers of the necessary integration of CC in policies
Output 2. The knowledge base on salinized lands is improved	2.1 Number of public/private institutions and producers regularly using the climate information produced by the project to make decisions to reduce and prevent salinization	Activity reports from local government offices Interviews with farmers, producers, cooperatives and women's groups Review of calls for proposals issued by government and the private sector	Baseline is zero	5 different new technologies are tested by local populations 20 institutions at the district level (including producers, local government, extension services, local NGOs, etc.) cite climate	10 different new technologies are tested by local populations 50 institutions at the district level (including producers, local government, extension services, local NGOs, etc.) cite climate	Knowledge of interactions between climate and land salinization is the basis for implementing adaptation measures

				change adaptatio n in their decisions	change adaptatio n in their decisions	
Output 3. Good practices for sustainable land management are used for the recovery of salinized land and prevention	3.1. Rehabilitated salinized land in ha	Monitorin g- evaluatio n reports	Currently total area rehabilitate d is 1,775 ha	500 ha (leading to a total of 2,275 ha)	1,000 ha (leading to a total of 2,775 ha)	Knowledge of the CC impact on salty lands will help to develop appropriate adaptive practices
	Mangrove restored in ha	Monitorin g- evaluatio n reports	800 ha (from previous projects)	100 ha	200 ha	Mangrove reforestation will limit seawater intrusion and safeguard agro-sylvo- pastoral and fishery activities
	Promotion of biosaline agriculture: Tolerant varieties seeds grow in ha	Monitorin g- evaluatio n reports	0	-	600 ha of various tolerant varieties seeds are grown	Use of tolerant varieties could help adapting agriculture to changing the environment, here land salinization
	Mineral amendment of in ha	Monitorin g- evaluatio n reports	Actual area under mineral amendmen t (30 % of the project interventio n area : 25 000 ha)	20 000 ha	50 000 ha	As nutrients of lands were depleted over the years, the use of mineral amendment should improve land fertility
	Organic amendment in ha	Monitorin g- evaluatio n reports	Actual area under organic amendmen t (15 % of the project interventio n area :	400 ha	1 000 ha	Use of organic amendment will further improve land fertility particularly to the desalinized lands

			13 000 ha)			
	Nature and number of hydraulic works to be built	Monitoring- evaluation reports	Few ponds and frame bunds exist in the project intervention area	- 5 ponds - 100 frame bunds	- 10 ponds - 200 frame bunds	Construction of hydraulic works will help to reduce the effects of water runoff and leaching that contribute to salinization. These will promote various activities (including agriculture, pastoral, fisheries, drinking, etc.) and ultimately contribute reversing land salinization trend
	Protected areas to be developed in ha	Monitoring- evaluation reports	About 4 000 ha of lands are presently under various forms of sustainable management and/or protection	-	1 000 ha	Natural soil regeneration techniques and improved land management could help fighting against erosion while facilitating infiltration, fostering biological rise and ultimately preserving and protecting lands.
Output 4. The construction of hydraulic works to reduce the effects of water run-off and leaching that contribute to salinization	4.1 Nature and number of works built	Contractor's completion report	0	5 ponds 100 frame bunds	10 ponds 200 frame bunds	There is a strong demand by grass-roots communities justifying works construction
	Promotion of small-scale irrigation : Area under water	Monitoring- evaluation	10 ha under water	5 ha under water	10 ha under water	Water-saving techniques could help

	saving techniques (drip system) in ha	n reports	saving techniques ; involving 10 women organizations	saving techniques 5 women organizations involved	saving techniques 10 women organizations involved	better manage the use of groundwater and limit saltwater encroachment
Output 5. Food and nutritional security of grass-roots communities is better provided	5.1 Number of producers using locally-produced adapted seeds	Monitoring- evaluation reports	Currently about 2,700 producers are using locally-produced adapted seeds	300 more added to the baseline	600 more added to the baseline	Results from pilot farms can be an incentive to producers
	5.2 Number of food secure households during the bridging period	Monitoring- evaluation reports	About 4,000 households are food secure	500 to be added to the baseline	1000 to be added to the baseline	Increased local production should foster this output
	5.3 Number of varieties of local products stored and processed in situ	Monitoring- evaluation reports	Currently there are less than 5 varieties of local products	3 new varieties of local products	6 new varieties of local products (in total to the baseline)	The availability of surplus of agricultural production will bring more opportunities for storage and diversification of processed food
Output 6. Grass-roots livelihood diversification to communities' exposure to losses from to climate change	6.1 Increased revenues for local populations	Local government census data, interviews with households	Average household income of USD 300		Increased by 10%	
Activities	Description		Inputs		Notes	
1.1 Integrating climate change and natural resource management into existing local conventions	The two districts of Fatick and Foundiougne as well as six other pilot communes (three per district) will, under the implementation of the new planning tools from the reform		- Management guidelines incorporating the CC dimension are developed - Planning sessions will		With support of the consultant in decentralization and local technical structures such as the Local Development Support Centre and the	

	(Act 3 of Decentralization) benefit from the project support to integrate CC in their local development plans	be organized at various levels	State representatives, the new documents will be developed in close consultation with the various stakeholders
1.2. Strengthening local climate change consultation committees to coordinate adaptation efforts	It is to put in place a local consensual framework guaranteeing a concerted and sustainable management of the environment and natural resources by all users under the control of the entire community with the supervision of the local community	<ul style="list-style-type: none"> - Good practice charter - Control body - Committed community 	Local conventions will build on a well-defined charter, accepted by committed communities, and placed under the arbitration of the elders and supervision of the local community controlling compliance with regulatory texts
2.1. Creating maps of salinized lands for specialized users	Map to the 1/10,000th (conduct survey at each km) of salty lands in the project sites	<ul style="list-style-type: none"> - Prospection trips - Cartographer 	A cartographer will help in the elaboration of the field surveys
2.2. Disseminating climate information about salty lands to communities and raising awareness	Various information materials will be developed for large dissemination among users	<ul style="list-style-type: none"> - 10-day bulletins, listening networks, media, etc. 	A climate information dissemination network will be developed with relays among users
3.1. Promoting reforestation (fodder species on grassy salt flats, etc.)	It is about using species adapted to saline ecosystems to conduct reforestation and agroforestry activities	<ul style="list-style-type: none"> - Plant material - Technical package - Small equipment 	The technology will be developed in conjunction with DEFCCS and ISRA
3.2. Protecting soils against the various forms of erosion (mulching)	Anti-erosion mechanisms (DRS/CES) will be put in place to fight against wind and water erosion	<ul style="list-style-type: none"> - Stone materials - Vegetable material - Small equipment 	Human investment will be mobilized and locally available materials will be given precedence
3.3. Mangrove restoration	Mangrove reforestation activities will be conducted to limit seawater intrusion and safeguard agro-sylvo-pastoral and fishery activities	<ul style="list-style-type: none"> - Vegetable material (propagule) - Small equipment - Techniques used 	Human investment will be mobilized and local populations will be trained on good planting techniques
3.4. Promoting biosaline agriculture	The works are built with clay and straw using an abundant local workforce. They will be built in valleys with high production potential	<ul style="list-style-type: none"> - Local materials - Techniques used 	The use of local materials helps to reduce the cost, facilitate maintenance and replicate the works
3.5. Improving the soil fertilization	Natural phosphate will be used to amend over 50,000 ha of land	<ul style="list-style-type: none"> - Study - Inputs (phosphate of Matam) - Technical training of 	Matam natural phosphates will be purchased with the project support. Supervision structures will have to

	1,000 composting units will be set up to amend salty lands	producers - nputs (water, straw, manure)	ensure the dissemination of technology Producers will be encouraged to build manure reserves with the help of supervision structures delivering the training
3.6. The development of grazing areas (agricultural, forest fallows and RNC)	Seeds adapted to highly salty areas will be developed	- Adapted seeds (maize, millet, rice) - Production techniques	Adaptive technologies will be promoted
4.1. The installation of water holding works (small dams and artificial basins)	Small dams and retention basins will be built to collect run-off in the sites with low availability of surface water	- Local materials - Technical expertise and workforce - Financing	Populations will provide the materials and workforce The project will provide technical and financial support
4.2 The development of large ponds to ensure water availability for at least 7 seven months (10 ponds)	The operation involves re-excavating ponds or building retention basins to collect water and ensure its availability over a long period of the dry season so as to guarantee continuous production	- Studies - Civil engineering works - Local workforce - Maintenance	The main ponds and sites for the construction of basins should be subject to studies, developments will be made with the active participation of public services, the private sector and local populations
4.3. Construction of anti-salt and anti-erosion works	Anti-salt and anti-erosion works will be built in six different sites according to various types to reduce land salinity	- Technical studies - Civil engineering works - Maintenance	Studies will help to determine adequate sites and the size of the works prior to joint works project – populations – supervision
4.4. Promoting small-scale irrigation (drip)	Water-saving techniques will be developed to better manage the use of groundwater especially and limit saltwater encroachment	- Diagnosis study - Equipment - Technical training	Diagnosis of adequate sites will be performed as well as equipment purchase while the project will provide the technical training
5.1. The provision of adapted seeds for at least 50% of farmers	Thirty jobs of seed operators will be created. Apart from this, autonomy in the supply of farm seeds will be developed to improve the availability in quantity and due time of this essential input	- Replication sites - Foundation seeds	Agricultural services will support the project in training seeds operators who at the same time will be relay trainers
5.2. Better management	The construction and equipment	- Studies	With the technical feasibility

of bridging periods	of 20 warehouses for storing food products will help to ensure a minimal food security stock during the recurrent bridging period of the dry season	<ul style="list-style-type: none"> - Civil engineering works - Equipment - Foodstuffs 	being determined, warehouses will be built, equipped with weighing machines and handling equipment, and supplied from locally-purchased products
5.3. The conservation, processing and marketing of farm productions	The creation of 500 jobs for women processors of farm products	<ul style="list-style-type: none"> - Trainers - Training materials 	Active private partners in this field will provide the training using accessible materials to facilitate knowledge transfer
5.4. Organizing producers in cooperatives and facilitating partnerships	It is about training 20 community facilitators to fight against malnutrition severely affecting children of 0–5 years and pregnant women through the PAIN programme (Integrated Nutrition Packages) using local products	<ul style="list-style-type: none"> - Trainer - Women facilitators - Training modules 	Health services will be put to use for training women relay facilitators with training materials highlighting the consumption of locally-made products
5.5 Producers' training on innovating salinized land management techniques	Train 1,000 producers in dynamic organizations on the various techniques to fight against salinization and recover salty lands	<ul style="list-style-type: none"> - Degraded sites - Producers' dynamism 	The project will build on pilot producers to disseminate good practices that will be scaled up
5.6 Training of producers on salt extraction techniques	It involves training 500 producers on sound salt extraction techniques in compliance with the hygiene, environment standards and protecting nearby productive activities against contamination	<ul style="list-style-type: none"> - Operating standards - Hygiene standards - Environmental standards 	Training will mainly focus on salt recovery in sites where the salinization process is irreversible and a salinity level too high to be restored
6.1. The agro–sylvo–pastoral development of large ponds and basins	300 producers on the 10 sites will be organized in management committees of 10 members and get training for the sustainable use of water resources and proper maintenance of the works	<ul style="list-style-type: none"> - Trainers - Populations - Training materials 	Training sessions will be organized in situ with various specialists to better explain the potential offered and methods for using the works
6.2. Availability of vegetable products and animal fodder for at least eight months in the year	The development of 10 vegetable perimeters of at least 5 ha and the training of 300 women will help to increase productions and improve incomes	<ul style="list-style-type: none"> - The enabling site - Equipment - Inputs 	Appropriate sites will be identified and equipped with the approval of the local community
6.3. Production of fresh fish in sufficient quantity	Fish farming, a high value-added activity will be developed through the management of at least five	<ul style="list-style-type: none"> - Studies - Civil engineering works 	Studies will help to determine the enabling sites and development works will

for a long period of the year	fish farms to improve consumption, produce incomes and create green jobs (180 or 30 per site)		be completed
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H.2. Arrangements for Monitoring, Reporting and Evaluation

Please specify institutional setting and implementation arrangements for monitoring and reporting. Please indicate how you will organize mid-term and final evaluations.

A participatory monitoring–evaluation system will be set up. It will be structured around a monitoring–evaluation plan to be built on a scheduled system at the national, regional and local levels. The control–monitoring–evaluation system will cover both the technical level (substantive monitoring) and the financial area (audit).

Communities will be involved in various manners, but the most formal way is through the local steering committee. This committee, including Local Government Units (LGU), extensions and community representatives, will be tasked to overseeing the implementation of the AWP and to discussing difficulties and bottlenecks that could arise during project implementation. In addition, the communities will be the main target of the MTE and the final evaluation. Ultimately, the community representatives will play a key role in the post-project monitoring and evaluation.

The M&E system will be organized around the following steps corresponding to the project implementation phases:

- The project start phase: monitoring the start is essential to allow stakeholders to upgrade and distribute roles and responsibilities in the implementation;
- Periodic monitoring of the implementation is provided on a six-monthly basis and produces a half-yearly report on the progress of the project activities. At year end, the six-monthly reports shall be consolidated into an annual report on project implementation;
- Evaluation by participants will be done through annual site visits enabling and helping stakeholders (including the project steering committee) to ascertain the project results;
- A mid-term evaluation is planned in order to measure the fulfilment rate of the results of the ongoing project and make the corrections and adjustments necessary to achieve the set objectives;
- The final evaluation allows for the measuring of the achievement of the expected results in terms of potential outputs, effects and impacts;
- An annual audit will be conducted to control the proper use of the project resources, in accordance with the current procedures of the State; and
- A final audit will be conducted by an independent cabinet nine months after the end of the project.

For mid-term evaluation, final evaluation, annual financial audits and final audit, the selection of the consultant will be done in compliance with the manual of contracting procedures of CSE.

The mid-term evaluation and annual financial audits will be undertaken by the national consultant recruited through national competitive bidding.

The final evaluation will be conducted by independent evaluators recruited through international open call for tenders and on a competitive basis. The final evaluation will take place after the four-year period of project implementation.

In addition, an exit strategy will be developed at the latest one year before the end of the project. This exit strategy will include provision for a monitoring and reporting plan for the post-implementation phase of the project. A budget of USD 50,000 has been allocated in year four of the project for such purposes. The monitoring and evaluation specialist hired to conduct monitoring over the course of the implementation of activities will be retained for continued monitoring and will report to the project steering committee, the local government units and the local committees set up by the project will play a key role in overseeing this monitoring. Monitoring and reporting will take place every six months over the course of three years. The project steering committee will approve the reports which will be submitted by the Implementing entity to the GCF Secretariat.

Please provide methodologies for monitoring and reporting of the key Outputs of the project/programme.

Monitoring the key results of the project will be conducted according to the result-based management through:

- Product indicators (outputs) which contribute to achieving them and means of verifying their effective fulfilment. The Logframe method will be used for monitoring;
- The Delphi method will also be used to verify the reliability and comprehensiveness and collected data; and
- The SWOT (strengths, weaknesses, opportunities, and threats) method will also help to carry out a more accurate diagnosis of achieved results.

Combining these methods will allow for the better substantive monitoring of the project results and will develop a reporting system highlighting the evolution of activities and the level of progress towards achieving the results (from outputs to potential effects and impacts).

I. Supporting Documents for Funding Proposal

- x NDA No-objection Letter
- x Feasibility Study
- x Integrated Financial Model that provides sensitivity analysis of critical elements (xls format)
- x Confirmation letter or letter of commitment for co-financing commitment
- x Term Sheet
- x Environmental and Social Impact Assessment (ESIA)
- x Appraisal Report or Due Diligence Report with recommendations
- x Evaluation Report of the baseline project
- x Map indicating the location of the project/programme
- x Timetable of project/programme implementation
- x Project/programme confirmation (see the template in Annex I to the Accreditation Master Agreement)

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*