



Mapping of Adaptation Interventions in Senegal

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INITIATIVE ON
Climate Resilience

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CGIAR Initiative on Climate Resilience

The CGIAR Initiative on Climate Resilience, also known as ClimBeR, aims to transform the climate adaptation capacity of food, land, and water systems and ultimately increase the resilience of smallholder production systems to better adapt to climate extremes. Its goal is to tackle vulnerability to climate change at its roots and support countries and local and indigenous communities in six low-and middle-income countries to better adapt and build equitable and sustainable futures.

Learn more about ClimBeR here: <https://www.cgiar.org/initiative/climate-resilience/>

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Summary

The CGIAR Initiative on Climate Resilience is geared towards Building Systemic Resilience against Climate Variability and Extremes in developing countries including Guatemala, Kenya, Morocco, the Philippines, Sri Lanka, Senegal, and Zambia. The initiative has four work packages: 1). De-risking agriculture production systems and livelihood from climate change, 2). Building production system resilience recognizing the linkages of climate, agriculture, security, and peace; 3). Developing adaptation instruments to inform policy and investments, and 4). Multiscale governance for transformative adaptation. Work Package 4 (WP4) expects to set up a bottom-up polycentric governance framework for multiscale transformative adaptation and targeted climate investments. WP4 has three components: A). Setting up a polycentric governance model and a “leave no one behind” indicator framework, and developing B). a climate smart governance dashboard to empower farmers, communities, and policy planners to plan and implement bottom-up integrated climate and water risk management interventions, and C) AWARE platform for early warning, early action, and early finance to promote integrated multiscale institutional responses to climate shocks. The *Initiative Prospective Agricole et Rurale* (IPAR) is supporting the *International Water Management Institute* (IWMI) in implementing component A of ClimBeR.

This report outlines the steps undertaken in mapping adaptation interventions in Senegal as part of ClimBeR activities towards developing a bottom-up polycentric governance model for transformative multi-scale adaptation and timely targeted climate investments. The mapping exercise the review of published grey and peer-reviewed literature and interviews with key stakeholders in national structures involved in food security, climate change and/or governance of early warning systems.

The IPAR team mapped 31 adaptation interventions and identified the stakeholders involved in the planning and implementation of the interventions, the geographic focus of the interventions and intended/target beneficiaries of the interviews. All the mapped intervention focused on food security with households and smallholder farmers as primary target beneficiaries. Different institutions, including government agencies and ministries, and development partners and non-governmental organisations are involved in planning and implementation of climate change adaptation in Senegal. The mapping activities, however, revealed that although the institutions identified through this mapping exercise share similar project goals and are involved in similar projects, they use different operational and institutional frameworks resulting in the lack of harmonization of tools deployed in assessing the orientation of the various interventions and duplication of interventions. The lack quality climate data was also identified as

a barrier to decision making and governance of adaptation planning and implementation. Ensuring that all stakeholders across all administrative levels and sectors have the same level of information to guide their action is critical in coordinating efforts in enhancing climate adaptation action. Furthermore, a robust governance mechanism to support the governance of adaptation interventions in Senegal remain urgent priorities. Deepening these governance structures that enables cross-sectoral and multi-stakeholder collaboration is critical in enhancing progress in adaptation planning and implementation in Senegal. Mainstreaming of climate change adaptation into national, sectoral and local level policies and budgeting are important enablers of in the governance of climate adaptation.

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List of Acronyms

ANACIM	Agence Nationale de l'Aviation Civile et de la Météorologie (<i>National Civil Aviation and Meteorology Agency</i>)
CCASA	Plateforme de dialogue Sciences-Politique sur l'adaptation de l'agriculture et de la sécurité alimentaire face au changement climatique (<i>Political-scientific dialogue platform on adapting agriculture and food security to climate change</i>)
CDD	Comité départemental de développement (<i>Departmental Development Committee</i>)
CDN	Contribution Déterminée au niveau National (<i>Nationally Determined Contribution</i>)
CEP	Champ-école-paysan (<i>Farmer Field School</i>)
CLD	Comité Local de Développement (<i>Local Development Committee</i>)
COMNAC	Comités Régionaux sur les Changements Climatiques (<i>Regional Climate Change Committees</i>)
CSE	Centre de Suivi Écologique (<i>Ecological Monitoring Center</i>)
DEEC	Direction de l'Environnement et des Etablissements Classés (<i>Environment and Classified Sites Department</i>)
DRDR	Direction Régionale de Développement Rural (<i>Regional Department of Rural Development</i>)
ENABEL	Agence belge de Développement (<i>Belgian Development Agency</i>)
ENDA Tiers Monde	Environnement et Développement du Tiers Monde (<i>Environment and Development in the Third World</i>)
FAPAL	Fédération des associations paysannes de la région de Louga (<i>Federation of farmers' associations in the Louga region</i>)
FNDASP	Fond National de Développement Agro-Sylvo-Pastorale (<i>National Agro-Sylvo-Pastoral Development Fund</i>)
GTP	Groupe de Travail Pluridisciplinaire (<i>Multidisciplinary Working Group</i>)
GTPODD	Groupe de travail pluridisciplinaire sur les Objectifs de Développement Durable (<i>Multidisciplinary working group on Sustainable Development Goals</i>)
IPAR	Initiative Prospective Agricole et Rurale (<i>Agricultural and Rural Prospective Initiative</i>)
ISRA	Institut Sénégalais de Recherche Agricole (<i>Senegalese Agricultural Research Institute</i>)
MAERSA	Ministre de l'Agriculture de l'Équipement Rural et de la Souveraineté Alimentaire (<i>Minister of Agriculture, Rural Equipment and Food Sovereignty</i>)
OCHA	Bureau de la Coordination des Affaires Humanitaires (<i>Office for the Coordination of Humanitarian Affairs</i>)

OP	Organisation de Producteurs (<i>Farmers Organisation</i>)
PIESAN	Projet d'Intensification Eco-Soutenable de l'Agriculture dans les Niayes (<i>Eco-sustainable agricultural intensification project in the Niayes</i>)
PIV	Périmètres Irrigués Villageois (<i>Village Irrigated Perimeters</i>)
PNA	Plan National d'Adaptation du Sénégal (<i>Senegal's National Adaptation Plan</i>)
RESOPP	Réseau des Organisations Paysannes et Pastorales (<i>Network of Farmers' and Pastoral Organizations</i>)
SAED	Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du fleuve Sénégal et des vallées du fleuve Sénégal et de la Falémé (<i>National Company for the Development and Exploitation of Land in the Senegal River Delta and Senegal River and Falémé Valleys</i>)
SNRAA	Système National de Recherche Agro-Alimentaire (<i>National Agri-food Research System</i>)

1. INTRODUCTION

The Governance 4 Resilience component of ClimBeR (WP4) expects to set up a bottom-up polycentric governance framework for multiscale transformative adaptation and targeted climate investments. WP4 has three components: A). Setting up a polycentric governance model and a “leave no one behind” indicator framework and developing B). A Climate Smart Governance (CSG) dashboard to empower farmers, communities, and policy planners to plan and implement bottom-up integrated climate and water risk management interventions, and C) AWARE platform for early warning, early action, and early finance to promote integrated multiscale institutional responses to climate shocks.

In Africa, WP4 of ClimBeR is being implemented including Zambia, Senegal, and Morocco. In Senegal, ClimBeR is working towards setting up a multi-scale polycentric governance (MPG) model and identify the relevant indicators that help develop the MPG tool guide to support transformative adaptation to build resilience. A first step in this regard was to develop an inventory of promising, resilient and transformative adaptation interventions in Senegal, and mapping the stakeholders involved in the interventions. The Initiative Prospective Agricole Rurale (IPAR), as part of the ClimBeR research project, has successfully mapped 31 adaptation interventions.

From the years 1990 to 2020, Senegal faced successive floods and droughts, affecting over 600K people affected in some drought events, with a lot of food insecurity. Senegal ranks 104 ([EU Risk Inform Index](#)) in terms of hazard and exposure, and the coping capacity is around 55%. This score is an average of the combination of about 30 indicators, including on governance, and resilience of infrastructure, which are quite low for Senegal.

Moreover, in Senegal there seems to be a lack of coping capacity and lack of coordination between siloed institutions dealing with climate disaster response and resilience. Bottom-up approaches to design and develop resilience interventions and policies are rare. Climate impact assessment now is done mostly from a top-down approach, where experts develop climate scenarios, and national expert committees develop some strategies for national adaptation plans. Inputs from rural communities, local institutions, are often quite limited.

2. METHODOLOGY

To gather data on innovative climate adaptation interventions, the IPAR research team reviewed relevant peer-reviewed and grey literature to identify and map potential transformative adaptation interventions. The review was followed with engagements with national structures involved in food security, climate change and/or governance of early warning systems. We integrated recommendations of key national actors working on projects of food security and climate change adaptation such as MAERSA, SAED, SE-CNSA, ANACIM, CSE, DEEC and ISRA (see table 1). We also engaged in discussions with international actors such as OCHA and ENABEL. This enabled us to have a well-informed database of climate change interventions in Senegal.

Table 1: Institutes consulted as part of the adaptation mapping exercise

Institutions consulted	Number of stakeholders interviewed
SE-CNSA: Secrétariat Exécutif du Conseil National de Sécurité Alimentaire	2
ANACIM: Agence Nationale de l'Aviation Civile et de la Météorologie	1
DEEC: Direction de l'Environnement et des Établissements Classés	2
SAED: Société d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal	1
ISRA : Institut Sénégalais de Recherche Agricole	1
MAERSA: Ministère de l'Agriculture, de l'Équipement rural et de la Souveraineté alimentaire	1
Enabel: Agence Belge de Développement	4
CSE: Centre de Suivi Écologique	1
OCHA: Bureau régional des Nations Unies pour la Coordination des Affaires Humanitaires	1

All the participants were purposively selected because they are positioned to provide expert insights on innovative climate adaptation interventions. The institutions that they represent are all important actors in the areas of climate change and food security. Interviews were conducted online and face-to-face, according to the stakeholders' preferences. With their agreement, the interviews were recorded and later transcribed. Findings from the interviews were triangulated with published reports (both peer-reviewed and grey literature) on the mapped adaptation interventions.

3. FINDINGS FROM THE MAPPING EXERCISE

The research activities mentioned above led to the identification of 31 adaptation interventions in Senegal. Eight projects were shortlisted from the 31 projects and presented to stakeholders for validation at a validation workshop of the results of the mapping of interventions. This mapping of interventions related to climate change and food security gave us an overview of climate adaptation options in Senegal. The following objectives were achieved. The following three elements have also been covered by the mapping exercise:

- Description of frameworks for dialogue and information between the various structures involved in the projects' implementation,
- Identification of the main beneficiaries of interventions (producers, private sector, local community, country or combination of several) and
- Identification of challenges in implementing interventions on climate change and food security.

3.1. Profile of the Institutes

3.1.1. SE-CNSA: Secrétariat Exécutif du Conseil National de Sécurité Alimentaire

The SE-CNSA's represents the executive branch of the CNSA (Conseil National de Sécurité Alimentaire). Its institutional anchor is the General Secretariat of the Government. The main objectives of SE-CNSA are to coordinate the national food security and resilience system and facilitate the consultation and coordination meetings on food security and resilience.

- **Brief Overview of the Projects**

In 2016, a National Strategy for Food Security and Resilience (SNSAR) was adopted by the Government of Senegal, and a National Program to Support Food Security and Resilience (PNASAR) was set up in November 2017 to operationalize the strategy. The New Resilient Territories (NTR), one of the major components of PNASAR, is a key innovation in the food security approach of Senegal. The overall aim of this strategy is to provide a sustainable economic response to the humanitarian and social challenges of food security.

3.1.2. ANACIM: Agence Nationale de l'Aviation Civile et de la Météorologie

ANACIM is a national agency that supervises and coordinates all meteorological, climatological and scientific activities relating to climate change. It is also responsible for the managing meteorological observation network, including installations, equipment maintenance and worldwide data exchange. Besides meteorology, ANACIM also supervises aviation and air travel in Senegal. ANACIM intervenes in several areas of food safety by providing information, data and services. Specifically, it is involved in the areas of health, food, fishery and energy. All these sectors are managed by the national climate service. It supports the sectors by providing¹:

- a. information for health-related decision-making,
- b. sea forecast to support safe and sustainable fishing, and
- c. information on the country's wind profile to guide the location of wind power to optimize their output. Using data collected on the extensive network of weather stations throughout the country, ANACIM produces services that are useful for agriculture and food security throughout Senegal.

● Brief Overview of the Projects

ANACIM has 24 ground-based weather stations in all regions of Senegal except in Sédhiou. ANACIM has the sole mandate for collecting and disseminating climatic and meteorological data. It is collaborating with universities and National Agency for Agricultural and Rural Council (ANCAR), to develop curricula to train agents, to ensure the proper dissemination of climate-related data at national level.

¹ <https://www.anacim.sn/spip.php?article63>

3.1.3. DEEC: Direction de l'Environnement et des Établissements Classé

The Environment and Classified Establishments Department (DEEC) is the climate change focal point for Senegal at the United Nations Framework Convention on Climate Change Secretariat and has been coordinating the issue at the national level under the Climate Change Division of the Ministry since Senegal signed the United Nations Framework Convention on Climate Change.

DEEC is responsible for coordinating Senegal's climate change policy. It has been working on climate change vulnerability studies in collaboration with ISRA, Senegalese universities, Enda Tiers Monde and sectoral ministries. Initially, these climate change vulnerability studies focussed on water resources, agriculture and coastal and maritime zones, because these were the three sectors most affected by climatic change. Gradually, DEEC realized that other sectors were also affected. With partners' support DEEC extended the vulnerability analysis to other sectors such as health, infrastructure, disasters and risks. The outcome of these vulnerability studies is to see, in the light of climate projections, the current and projected impacts of climate change on each sector and adaptation strategies for each sector under various global warming scenarios to guide sectoral policies (DEEC, 2017).

DEEC coordinated the development of Senegal's Nationally Determined Contribution (NDC) to the Paris Agreement in 2020. The National Determined Contribution is Senegal's roadmap to the international community demonstrates Senegal's commitment to climate mitigation and adaptation and increasing its climate resilience. DEEC is currently working on a national climate change adaptation plan for the agriculture sector with the Global Environment Facility in collaboration with FAO, IPAR, UNDP, AFD and GIZ. All these partners have worked with DEEC on national adaptation plans, with a sectoral approach and a strong focus on agriculture and water resources. DEEC's interventions are at sectoral and national levels. In collaboration with the CDN, the DEEC has carried out national vulnerability studies for all the eco-geographical zones focussing on eco-geographical zones with reference to data availability from ground-based observation stations (République du Sénégal, 2020).

All DEEC projects are carried out in collaboration with either the *Agence Française de Développement* (AFD), FAO or UNDP. These are public projects that support the national adaptation plan process, as well as the implementation of NDC. In the area of adaptation, AFD is supporting DEEC as part of the implementation of the NDC in vulnerability studies for the Senegal River Delta agro-ecological zone, as well as in the integration of climate change and adaptation into curricula, including studies on water

resources in Diass and the implementation of tools to monitor adaptation to the CDN. UNDP assists DEEC with adaptation planning documents. The FAO is involved in vulnerability studies for the specific agricultural sector in the Niayes area for certain crops, and also in the Kolda region for maize and rice. DEEC is responsible for coordinating these various projects. It takes a sectoral approach, with agreements signed with each sector. For example, for projects with the FAO, the latter has signed agreements with DEEC as well as with each sector, notably agriculture. The AFD, for instance, signed an agreement with SAED. DEEC played the role of a focal point to ensure coherence with UN guidelines on vulnerability studies, as well as the link with the NDC and national priorities in relation to the sectors (DEEC, 2017).

DEEC considers that it has largely achieved its results. The aim was to launch a process of national appropriation of the climate change issue at the level of the various sectors and players. This has been achieved, with the realization that the climate issue deserves to be integrated into sectoral policies. Sectors have taken ownership by introducing tools and building capacity to understand how vulnerability analyses are carried out. Sectors are also defining priority adaptation options and learning how to draw up project proposals and project sheets in the area of climate change. This has enabled the sectors to set up teams to deal with the issue of climate change, and to have the necessary sectoral reports. Now that the options have been clearly defined, DEEC is working with partners move on to implementation. A very inclusive overall effort has been made with the sectors, with research, universities and civil society, to see how these sectoral policies integrating climate and these national sectoral adaptation plans can support and help Senegal build its climate resilience (DEEC, 2017).

3.1.4. SAED: Société d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal

SAED main objective is the development of irrigated agriculture on the left bank of the Senegal River. It is the State's delegated project manager for public investment in hydro-agricultural development and infrastructure. SAED does consulting, support and operation for the various socio-professional categories and local collectives directly or indirectly involved in irrigated agriculture.

SAED's primary objective is to contribute to food sovereignty in the Senegal River Delta and surrounding areas. Another objective of SAED is to address climate change in the departments adjacent to the Senegal River. This objective began to take on greater importance in recent years when SAED noted significant changes in agricultural production in the region due to climate change. One example is the alteration in

the cropping calendar. However, SAED does not yet operate a large-scale early warning system for natural disasters in the Senegal River Valley and has not implemented specific climate adaptation projects. SAED manages all aspects of community capacity building to achieve food sovereignty.

The Charte du Domaine irrigué de la Vallée du Fleuve Sénégal (CDI) (Senegal River Valley Irrigated Domain Charter) is a constitutive framework for (1) "the complete securing of resources (land and water)" and (2) "their development within the framework of rational and sustainable management. In this way, the CDI ensures that farmland yields are maintained and that environmental standards are respected in the region. The CDI mainly targets rural communities that use water resources. Within SAED, the *Direction du développement et de l'appui des collectivités territoriales* (DDAC) and the *Direction des aménagements et infrastructures hydroagricoles* (DAIH) are responsible for the implementation of interventions.

- **Brief Overview of the Projects**

SAED works with public and private institutions to implement its projects. It collaborates with development agencies such as (1) Agence Française de Développement (AFD), (2) Korea International Cooperation Agency (KOICA) and (3) Japan International Cooperation Agency (JICA). SAED also works with structures such as (1) Senegalese Agricultural Research Institute (ISRA), (2) Africa RICE and (3) Gaston Berger University (GBU).

At the operational level, SAED is responsible for land development, installing irrigation systems and developing plots. Producers manage the irrigated perimeters after setting up a GIE and signing a CDI with SAED. The projects are collective and managed by a producers' group (GIE) and a hydraulic union, which manages the water. Partners and farmer-based organizations (FBOs) work on cultivation techniques to combat yield decline, sustainable land management and discuss producers' needs. Interventions identified by SAED on which the ClimBeR project could work:

- PREPIV - Project for the Rehabilitation and Extension of Village Irrigated Perimeters.
- PAPRIZ - Rice Production Development Project
- DELTA - Local Economic Development and Agroecological Transition Program

3.1.5. ISRA: Institut Sénégalais de Recherche Agricole

ISRA is Senegal's national agricultural research institute. Its principal objectives are (1) the development and advancement of scientific research, (2) the participation in the formulation of national development

policy, (3) the valorization of research results, (4) the transfer of scientific knowledge, (5) training in and through research. ISRA is unique in that it conducts research in four areas of production (crops, livestock, forestry and fisheries) and in the socio-economic dimension of agriculture (ISRA, 2021). ISRA works at two levels to address climate change and food security:

1. Agro-ecological characterization of the different agricultural production zones. This involves monitoring climate dynamics to find adaptation strategies through varietal selection based on the agro-climatic context (crop varieties adapted to climate change, rainfall and climate variability).
2. Conducting research and development projects involving implementing strategies to combat climate change and strengthening producers' technical capacities for climate resilience.

- **Brief overview of the projects**

ISRA's projects are public and cover all of Senegal's agro-ecological zones. Current projects include:

- A rice-growing project in Casamance financed by the Italian Cooperation, which aims to restore several valleys in Casamance and support producers. This project has increased yields from 3 to 6 or 9 tonnes per hectare. The project, now completed, had an annual budget of around 200,000,000 FCFA and trained 4700 women on various techniques of rice cultivation.
- CNRF, a branch of ISRA, is also involved in agroforestry projects with the climate-intelligent village program in partnership with ANACIM (ISRA, 2021).
- Project to reclaim saline land in the Fatick region through improved varieties, organic matter inputs and planting of tree species capable of extracting salt that contaminates the soil. The project has achieved improved rice yields of 5 to 7 tonnes per hectare. The project, completed in 2020, had an annual budget of 60,000,000 FCFA (ISRA, 2021).

ISRA does not have a functional early-warning systems, but a tool is currently being tested in collaboration with the Columbia University, and could be implemented in the coming dry season. This tool will use seasonal forecasts to simulate sowing dates and the fertilizers to be used to optimize rice, millet, and sorghum yields.

ISRA conducts participatory research that aims to have a widespread dissemination of results. It involves farmer organizations and stakeholders in research projects, conducting experiments on farmers' plots to promote the dissemination of results. Varietal selection is also carried out in collaboration with producers,

who are involved from seed production to consumption, thus facilitating the adoption of technical guidelines and seeds.

An annual scientific and budgetary program enables annual activities to be planned. A pre-programming is first carried out by each research centre to identify, with the stakeholders, the needs of its intervention zone and evaluate the budget. Each centre presents its roadmap to the general management, which evaluates the proposals. This annual programming serves as a framework for dialogue, but there is no formalized dialogue framework.

ISRA's projects are implemented in collaboration with partners such as the National Agency for Agricultural and Rural Council (ANCAR), Farmer Organizations and NGOs. ISRA's interventions concern first and foremost the State, then producers and the private sector, which are increasingly using research results. The State supports ISRA in the implementation of certain projects, such as seed production (pre-basic seed multiplication) and the payment of personnel. ISRA works with ANACIM, ANCAR, universities, farmers' organizations, RESOPP (Réseau des Organisations Paysannes et Pastorales), FAPAL (Fédération des associations paysannes de la région de Louga) and foreign partners on horticultural and rice production as well as rational water management (ISRA, 2021).

3.1.6. MAERSA: Ministère de l'Agriculture, de l'Équipement rural et de la Souveraineté alimentaire

MAERSA's objective is to feed Senegal and combat hunger and malnutrition. MAERSA projects often focus on food sovereignty and climate change. MAERSA has a department dealing with aspects of food security and agricultural resource management (including livestock and fisheries). This department is involved in the entire agricultural value chain (land, water, vegetation, seeds, etc.), from plot acquisition to production including labour, women's access to land, production financing, capacity building, crop protection, the fight against invasive species, rural equipment (production, processing, conservation, storage warehouses) (MAERSA, 2021).

MAERSA has 9 directorates, each of which plays a key role in implementing the Ministry's projects:

- Direction de l'Agriculture ;
- Direction de la Protection des Végétaux ;
- Direction des Bassins de Rétention et des Lacs artificiels ;

- Direction de l'Horticulture ;
 - Direction de l'Analyse, de la Prévision et des Statistiques agricoles ;
 - Direction de la Modernisation de l'Équipement rural ;
 - Direction du Financement et du Partenariat avec les Organisations ;
 - Direction de l'Administration Générale et de l'Équipement.
 - Direction Régionale de Développement Rural (DRDR)
- **Brief overview of the projects**²³⁴⁵

MAERSA operates in Senegal's 6 agro-ecological zones, taking account of their specific features. Current projects include:

- Competitiveness Program for Agriculture and Livestock in Senegal (PCAE)
- Water Valorization Project for the Development of Value Chains (PROVAL CV)
- National Rice Self-Sufficiency Program (PNAR)
- Support Program for Senegal's National Agricultural Investment Program (PAPSEN) + Italian Agricultural Program for Senegal (PAIS)
- Support Program for Agricultural Development and Rural Entrepreneurship Phase II (PADAER II)
- Rice Value Chain Development Project (PDCVR)
- Regional Support Project for the Sahel Irrigation Initiative (PARIIS)
- Project Agri-jeunes Tekki Ndawni
- Project for the Development of Resilience to Recurrent Food Insecurity in Senegal (DRIARS)
- Eco-sustainable agricultural intensification project in the Niayes (PIESAN)

MAERSA projects are publicly funded and cover all sectors of the agricultural value chain. Project governance is the responsibility of each implementing structure, but the Ministry is responsible for evaluation according to its roadmap.

² <https://agriculture.gouv.sn/projets-programmes/projet-de-developpement-de-la-chaine-de-valeur-riz-pdcvr/>

³ <https://agriculture.gouv.sn/projets-programmes/projet-dappui-regional-a-linitiative-pour-lirrigation-au-sahel-pariis/>

⁴ <https://agriculture.gouv.sn/projets-programmes/projet-dappui-regional-a-linitiative-pour-lirrigation-au-sahel-pariis/>

⁵ <https://agriculture.gouv.sn/projets-programmes/agri-jeunes-tekki-ndawni/>

For the implementation of PIESAN, there is a Management Unit that brings together all the VC experts (ANCAR, ITA, ISRA, DHORT, INP, SDDR) and steers the implementation of the project in collaboration with the concerted services, each of which is involved in seed production, processing of agricultural products, research and improvement of practices according to its skills. Each department reports to the Ministry, which evaluates the pace of implementation (Agenzia Italiana per la Cooperazione allo Sviluppo, 2021).

The PIESAN program has been extended by 2 years and will end in 2025. The Niayes area was chosen for its importance in horticultural production, which varies around 80% of the total national production. PIESAN takes into account sustainable ecology, the protection of land against degradation (wind and water erosion), rational water management and agriculture adapted to the CC with the use of renewable energies (solar motor pump, drip irrigation system) (Agenzia Italiana per la Cooperazione allo Sviluppo, 2021).

The results of the PIESAN are quite positive. The project's execution rate exceeds 70%, and by the end of the first half of 2022, the resources mobilized under the first drawdown have been executed at a level of over 73% (access to land resources, installation of storage warehouses, varietal improvement, training)⁶. MAERSA set up an early-warning system on climate variability tool which provides climatic information and supports farmers by suggesting the most preferable sowing dates, amount of rainfall and the allocation of new areas (MAERSA, 2021).

3.1.7. Enabel: Belgian Development Agency⁷

Enabel is the development agency of the Belgian federal government, implementing Belgium's international development policy. It is a support project that aim to reduce rural emigration and reintegration in the Groundnut Bassin (PARERBA). It is a five-year project (2018-2022) with a budget of 18 million Euros. It was the first time Enabel has worked with a donor other than Belgium, which is the EU. Despite its urgent nature, the project has adopted an approach that promotes sustainable agriculture in technical, economic, financial and environmental terms. The capitalization phase has clearly highlighted

⁶ <https://agriculture.gouv.sn/projets-programmes/%EF%83%98programme-dappui-au-programme-national-dinvestissement-agricole-du-senegal-papsen-%EF%83%98programme-agricole-italie-senegal-pais/>
<https://papsenpais.org/>

⁷ <https://open.enabel.be/en/SEN/2506/p/projet-dappui-au-renforcement-des-systemes-alimentaires-durables-au-sine-saloum-au-sngal.html>

this approach, with needs for improvement in collaboration with communities on climate change and environmental issues⁸.

➤ **Climate Project (September 2023-April 2027) budget 11.5 million Euros**

The aim of the project is to improve natural resources and climate resilience in the Sahel, and to combat soil and plant cover degradation in 4 Sahelian countries (Mali, Niger, Burkina Faso and Senegal). The specific objectives are to provide technical support to improve natural resource management in line with adaptation to climate change, and to bring together national and regional expertise to address a number of challenges, including soil and vegetation cover degradation, climate change, economic impacts such as reduced productivity, reduced inequalities in development, insufficient coordination and exchange of information between sectors in relation to climate actions, and weak governance of natural resources.

In Senegal, the project operates in the regions of Fatick, Kaolack and Kafrine with partners such as the environment department, water and forest department, ISRA, ANCAR, the Great Green Wall Agency and CSE. The project supports the promotion of agroecological practices, innovation in water resource management, and inter-territoriality for better water and soil management. A diagnosis of natural resource management is underway in the intervention zones. The CSE is mapping the area to identify needs and the level of soil degradation⁹.

➤ **The Goungé Mbay Project: 2022-2026 EU funding budget 18.5 million Euros¹⁰¹¹**

The project's aim is to promote sustainable food systems and increase productivity through the agropole centre project, which targets upstream agro-industrial processing. The project focusses on: infrastructure, links between production areas and marketing, and support for operations with a view to improving the quality and quantity of production. Compliance with the agro-sylvo-pastoral law is one of the main thrusts of this project. An institutional approach is favoured by this project, which aims to strengthen and support the agro-sylvo-pastoral orientation law by relying on the FNDASP (national agro-sylvo-pastoral

⁸ <https://open.enabel.be/en/SEN/2257/p/projet-d-appui--la-rduction-de-l-emigration-rurale-et--la-rintgration-dans-le-bassin-arachidier.html>

⁹ <https://open.enabel.be/en/SEN/2534/p/portefeuille-r-gional-thmatique-climat-volet-sngal-2022-2026.html>

¹⁰ <https://xibarubambouck.com/2023/03/15/cdd-le-projet-gunge-mbay-implante-ses-racines-dans-le-departement-de-koungheulvideo/>

¹¹ <https://aps.sn/le-projet-gunge-mbay-pour-favoriser-la-croissance-de-la-valeur-ajoutee-de-lagroalimentaire-au-sine-saloum/>

development fund), which provides funding for agricultural services. In fact, the project injects funds into FNDAPS, which looks for demand for agricultural services among the populations of the Nioro, Kounghel and Foundiougne departments. FNDASP then finances the project through public or private service providers to meet producers' needs.

The Goungué Mbay project is designed to strengthen institutional resilience through the National Agro-Sylvo-Pastoral Development Fund (FNDASP), which supports sustainable land management using an agro-ecological approach. It supports the State in the institutional resilience of funds through FNDASP and the financing of agricultural advisory services for extension, training of rural actors, organizational support, and sustainable food systems. There is also an economic resilience component through the supply of quality and quantity to producers to work with agro-industries.

The project focusses on 5 value chains that meet producers' needs. A strong inclusion of producers from the groundnut basin is necessary to facilitate support, which is oriented towards agro-ecology and sustainable management of natural resources. The project is also geared towards supporting producers with an agro-entrepreneurial approach, with a focus on inter-professional support and commercial intermediation, improving the link between producer and consumer.

This project also works in synergy with Enabel's climate project to promote economic resilience. Together with the FAO, FNDASP has set up the Climate Resilience Window, which was awarded 3rd place among the world's best projects by the Global Environment Facility. The FAO has extended the project by launching the *projet de résilience et de reforestation intensive pour la sauvegarde des Territoires et des écosystèmes au Sénégal*. This will provide a mechanism for working on sustainable land management and climate and institutional resilience. Enabel is currently negotiating with the EU for additional funding to extend Goungué Mbay's intervention to other departments¹².

3.1.8. CSE: Centre de Suivi écologique

CSE is a national agency whose mission is to contribute to the knowledge and sustainable management of natural resources and the environment, through the production and dissemination of decision-support

¹² <https://open.enabel.be/en/SEN/2506/p/projet-d-appui-au-renforcement-des-systmes-alimentaires-durables-au-sine-saloum-au-sngal.html>

products and services for the State, local authorities, the private sector, civil society, research and development institutions, producer organizations and development partners.

- **Brief overview of the projects**

There is a direct correlation between everything the CSE does and climate change adaptation. There are initiatives created by the CSE, but there are also other donor initiatives in which the CSE is asked to implement the project with other institutions. The CSE monitors certain "regalian" activities, such as bushfire management (CSE, 2011).

The CSE implements the FAO's Farmer-Field-School project in the Sylvopastoral zone and the Groundnut Basin. In a co-learning effort, the producer is at the heart of the project's development, with the biophysical characterization of the intervention zone, the collection of good climate change practices (local practices, endogenous knowledge) and the conceptualization of a curriculum that considers local perspectives. The CSE also implements the Action Against Desertification project, which addresses the context of land degradation in partnership with the Great Green Wall (GMV) in the Sylvopastoral zone and the Groundnut Basin.

The CSE is working on the Coastal Degradation Adaptation Fund project, which aims to stabilize erosion through development. The vision seeks to stress that to address climate security, we need to address water, food and energy security (CSE, 2011).

3.1.9. OCHA: Bureau régional des Nations Unies pour la Coordination des Affaires humanitaires (United Nations Regional Office of West- and Central-Africa for the Coordination of Humanitarian Affairs)

- **Overview of existing frameworks for dialogue and information between different structures**

Since 1994, a National Committee for information on climate change (COMNAC) has been in place at the national level. COMNAC (national committee for information on climate change) was established by decree in 2013. Since 2011, a decree has institutionalized the COMNAC, with the secretariat provided by the DEEC.

This committee brings together various structures (state and private). Article 11 of the COMNAC decree calls for the creation of regional climate change committees (COMREG) by order of the Governor in all regions of Senegal. The secretariat is provided by the Division Régionale de l'Environnement et des Etablissements Classés of the United Nations Framework Convention on Climate Change (UNFCCC) region. Since 2001, regional committees on climate change (COMREG) have been set up at regional level, with the secretariat provided by the regions. There are also specialized committees for the fisheries sector, with the Fisheries Directorate, and the Science-Policy Dialogue Platform on Adaptation of Agriculture and Food Security to Climate Change (CCASA) for the agriculture sector. Not all departments have agriculture and food security platforms¹³.

However, since 2012, ANACIM has set up GTPs (Groupe de travail pluridisciplinaire - multidisciplinary working groups) at departmental level, with the backing of the prefects, which consist of platforms for receiving and sharing information with the aim of contributing to agricultural risk management. These platforms have an impact on food safety, as the information provided for decision-making can increase yields, crop protection, livestock numbers, etc. The GTPs bring together the technical services of the prefects in the departments to help sectors such as agriculture, livestock and fisheries to adapt to climate change through climate information, which is coordinated by the prefects and whose secretariat is provided by the departmental agricultural services. The aim is to have these forums for dialogue, to make sure we have coherent action. The GTPs at national level are coordinated by ANACIM and provide a regular analysis of the national situation every ten days¹⁴.

There is also a multidisciplinary working group on the Sustainable Development Goals (GTPODD), with governance provided by ANACIM, CSE, the Ministry of Livestock and DAPSA. We also have the National Fisheries and Climate Change Platform, which has branches at departmental level, and the Agriculture and Food Security Climate Change Platform, which also supports stakeholders in sustainable land management, climate information and the integration of climate issues at local level, and which also has branches at departmental level. ANACIM has set up the national climate service framework, which brings together all social and economic sectors to provide targeted, beneficial climate information specific to each sector (agriculture, livestock, fisheries, etc.).

¹³ <https://www.fao.org/africa/news/detail-news/en/c/1621854/>

¹⁴ <https://www.food-security.net/projet/programme-national-dautosuffisance-en-riz-pnar/>

With civil society, too, there are specific platforms that bring together stakeholders to help them adapt to climate change. At SAED, there is a framework for dialogue called the Scientific Committee, which brings together all the SAED's structures since 1988.

With PARERBA, different consultation frameworks have been set up with national governance through national steering committees. Local and regional consultation frameworks have been set up to promote entrepreneurship and sustainable job creation. At the communal level, infrastructures are built using a communal project owner approach, with management transferred to the communes. A management contract enables each commune to oversee the management of the perimeters by the cooperatives. At village level, PARERBA has set up Chaine de Valeurs Agricoles (CVA), enabling the local population to monitor the management of the perimeters by the cooperatives.

The ENABEL Climate project has set up a consultation framework known as the Comité Départemental de Développement (CDD) which, along with the Comité Local de Développement (CLD), is the framework on which the project relies for dialogue, monitoring and support.

With Enabel's Goungé Mbay project, the FNDASP (national agro-sylvo-pastoral development fund) is an external counter which is not an operator in the field, but finances and monitors implementation by the service provider in collaboration with the DRDRs and SDDR. The project is based on existing consultation and monitoring frameworks at departmental and regional level, in collaboration with local authorities, the structures and services concerned and local communities, to ensure better ownership and monitoring by project beneficiaries. ISRA and ANCAR are also involved in the project implementation process.

Most of these platforms operate more or less on a means-tested basis. At departmental level, for example, most operate on the basis of whether there is a project to support them.

In the case of COMNAC, the DEEC works with all partners to ensure that support systems are always in place to sustain their momentum, by ensuring that these partners include a budget for COMNAC and COMREG activities in their projects and programs. In this way, budgets are allocated to lead activities at the national and regional level, while highlighting national expertise in all these programs. In fact, all the intervention strategies should help strengthen national capacity to build resilience to climate change. The

COMNAC should normally operate with a state budget, which has yet to be defined, but given the state's meagre resources. The idea is to move towards national budgets to support the various sectors and existing platforms. The COMREGs are chaired by governors, while the COMNAC is chaired by the Minister for the Environment.

The national agri-food research system (SNRAA) is an institutional framework that brings together structures working in the agricultural sector. However, the lack of dynamism and financial resources limits the functioning of this framework.

4. OVERVIEW OF THE MAPPED INTERVENTIONS IN THE AREAS OF CLIMATE CHANGE AND FOOD SECURITY

Please find below a list of the 8 preselected projects that were presented during the validation workshop of the results of the mapping exercise of climate change and food security interventions in Senegal. This workshop took place on 11 July 2023. These 8 interventions formed the basis for the group work sessions during the workshop.

➤ *Selection process explained*

The first step in the selection process was to draw up an inventory of promising and resilient adaptation interventions in Senegal, and to map the stakeholders involved in these interventions. This inventory became a non-exhaustive list of 31 interventions. A second step was to proceed to a pre-selection of 8 interventions extracted from the inventory. This process was based on both stakeholder interviews and extensive secondary research. In order to facilitate this process, IPAR and IWMI identified three (3) selection criteria that were to be used as an evaluation grid for the selection of transformative, resilient and innovative interventions. The three selection criteria were described as follows.

1. *Nature of the intervention*: To ensure that the selected interventions **lead to transformative adaptation** in the face of climate change. By way of clarification, the IPAR team presented the conceptual framework of transformative adaptation to the participants.

2. *Nature of actors and stakeholders*: To ensure that the selected interventions take into account a framework for multi-stakeholder dialogue and the strengthening of local actors in planning, implementing, monitoring and evaluating activities.
3. *Geographical area of intervention*: To ensure that the interventions selected **meet the specific territorial challenges** related to climate change and food security in the area.

Before the group work sessions that were organized as part of the **validation workshop of the results of the mapping of interventions**, the IPAR team presented a summary of the 8 preselected interventions. These interventions formed the basis for the group work sessions. The aim of the group work sessions was to

4.1. PROVALE-CV: Water Valorisation Project for the Development of Value Chains

Secondary research: Yes

Stakeholder institutions interviewed: None

Status: Ongoing (November 2019–October 2024)

The Water Valorization Project for the Development of Value Chains (PROVALE-CV) is the first operational project derived from the National Program for the Development of Local Irrigation (PNDIL). This program aims at exploiting the enormous possibilities offered by small-scale irrigation, to propose adapted solutions at the level of the different ecosystems ¹⁵.

Objectives: To contribute to the establishment of a strong, inclusive, and sustainable economic growth and to the improvement of the living conditions of rural populations. (2) To sustainably increase agricultural production, employment, and income in rural areas through the mobilization of surface water and groundwater (BAD, 2019).

¹⁵ <https://agriculture.gouv.sn/projets-programmes/projet-de-valorisation-des-eaux-pour-le-developpement-de-chaines-de-valeur-proval-cv/>

Components of the project: (1) Modernization and development of agricultural infrastructure; (2) Development of value chains and youth agricultural entrepreneurship; and (3) Project management.

Geographic focus/coverage: PROVALE-CV operates in three agro-ecological zones: the Niayes, the Groundnut Basin and the Casamance across 8 administrative regions: (1) Kaolack, (2) Fatick, (3) Kaffrine, (4) Diourbel, (5) Thiès, (6) Ziguinchor, (7) Sédhiou and (8) Kolda.

The target beneficiaries: Farmers, local communities and the private sector.

The stakeholders involved in the project's implementation including their roles: ROVALE-CV is supervised by the Ministry of Agriculture and Rural Equipment (MAER-SA), with financial monitoring by the Ministries in charge of the Economy and Finance (MEPC). Project management is entrusted to a Coordination Unit based in Dakar. Steering is ensured at national level by a National Steering Committee chaired by the Secretary-General of the MAER, and at regional level by Regional Dialogue Committees, chaired by the regional governors. Other implementation partners include ISRA, ANACIM and Farmer-based organizations. The project is funded by a consortium of donors including the African Development Bank (AfDB) — 49,87%, the People's Bank of China (PBC) — 21,93% OPEC Fund for International Development — 14,62%, International Fund for Agricultural Development (IFAD)— 3%, the Senegalese government — 5,42% and beneficiaries of the project — 5,16% (BAD, 2019).

Key outcomes of the interventions: According to the latest overall statement of budget execution, we can report on the following:

- Overall rate of execution of the contracting plan: 85%.
- Overall commitment rate: 65%
- Disbursement rate: 38%
- Overall physical execution rate: 45%

4.2. PADAER II: Support Program for Agricultural Development and Rural Entrepreneurship phase II

Secondary research: Yes

Stakeholder institutions interviewed: None

Status: Ongoing (2019-2025)

Objectives: (1) Contribute to the reduction of rural poverty and stimulate economic growth in the intervention areas. (2) Sustainably improve food security and the income of small producers, as well as to create sustainable and remunerative employment for rural people, especially women and youth

Components: (1) Improvement of the supply of agricultural products, (2) Development of the sectors and financing of the actors, (3) Coordination, monitoring and evaluation, value management¹⁶.

The geographic focus/coverage: Project coordination unit (PCU) based in the region of Tambacounda, with branches in the regions of Kédougou, Kolda and Matam.

The target beneficiaries: Farmers.

The stakeholders involved in the project's implementation including their roles: PADAER-II is being supervised by the MAERSA. The MAERSA put in place a Steering Committee (SC) for the first phase of PADAER, which will be enlarged to cover the new PADAER-II activities. The SC meets in ordinary session twice a year, and in extraordinary session as required. It is chaired by the MAER or his representative, and made up of representatives from the Ministry of the Economy, Finance and Planning, the Ministry of Livestock and Animal Production (vice-chairman), the Ministry in charge of local authorities, the Ministry in charge of trade, the Ministry in charge of the environment, the Ministry in charge of youth, the Ministry in charge of women's affairs, representatives of local elected officials (departments and communes), representatives of sector consultation tables, representatives of the UP federation, representatives of breeders' and farmers' platforms (CNCR, MDE, DIRFEL, etc.), FPOs and resource persons as required. Other IFAD projects and partners (ANCAR, SAED, Bambaare, CRETEF, ADPME, SRADL, SRADC, INP, CNCAS, CNAAS) are invited as observers. The CP Secretariat is provided by DAPSA. It is assisted by CEP/MEPA. The Program also has a technical committee which analyses PTBAs, sub-project applications and funding requests, for transmission to the regional sub-project approval committees (CRA) and the CP. The

¹⁶ <https://padaer2.sn/>

Technical Committee is made up of representatives of the State's extension services, NGOs, strategic partners, PADAER-II specialists and the projects and programs that intervene in the area (FIDA, 2018).

Key outcomes of the interventions: According to the latest overall statement of budget execution, the project reports a 30% disbursement rate. The Annual Budget Work Program of 2022 has been executed at a rate of 12.78% (physical) (FIDA, 2018). Further breakdown of the outcomes of components of the interventions are provided below:

- **Component 1:** "improvement of the agricultural product supply" has been executed at 6.75%.
- **Component 2:** "development of the sectors and financing of the actors" at 12, %.
- **Component 3:** "coordination, monitoring evaluation, knowledge management" at 16.54%.

4.3. Climate-Smart Villages

Secondary research: Yes

Stakeholder institutions interviewed: ISRA

Status: Completed (2012-2016)

Objective: Agricultural productivity among smallholder farms through climate-smart technologies that build resilience and reduce greenhouse gas emissions.

Approach: Put in a place a participatory framework that helps guide the actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate.

The geographic focus/coverage: Kaffrine region, Daga Birame Municipality.

The target beneficiaries: Farmers (including (agro)pastoralists), youth, pregnant women, children under

The stakeholders involved in the project's implementation including their roles: The actors responsible for planning and implementation are ISRA, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), ANACIM and the department for agriculture of the MAERSA. The implementation partners are ANCAR, Service des Eaux et Forêts, World Agroforestry Centre (ICRAF), West and Central African Council for Agricultural Research and Development (CorAF/WECARD), International Union for Conservation of Nature (IUCN), Regional Climate Center for West Africa and the Sahel (AGRHYMET/CCR-AOS), ONG AGRECOL, World Vision Senegal, CSE. The project is funded by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). ISRA and ANACIM are responsible for the evaluation and monitoring aspects of the project (Sanogo et al., 2016).

Key outcomes of the interventions: Project is completed. The following two axes of outcomes is to be noted:

a. **Improved climate information services**

- Villagers now use seasonal forecasts to help them make decisions about activities linked to the agricultural season (repairing farm equipment; mobilizing inputs; choice of sowing dates, suitable varieties, etc.). These tools strengthen people's resilience to climate variability.
- The population is currently integrating the "participatory approach services for agriculture" (PICSA), which uses historical climate data, participatory decision-making tools, and forecasts to help farmers identify and better plan for livelihoods adapted to local climate and their specific situation. This approach has enabled farmers to create strategic plans well before the start of the agricultural season.
- Farmers are trained in the use of a climate-resilient Agricultural Technology Package (PTACR), which has led to a 33% reduction in NPK fertilizer and a 71% reduction of urea, compared with the farmers' usual practice. PTACR resulted in a yield increase of 63% compared with 2014 (a year of deficient rainfall) and 96% in 2015 (a year of surplus rainfall) (Sanogo et al., 2016).

b. **Improved Nutrition and Income-Generating Activities**

- Five species of high-yielding forest fruit trees are used in the community plot and in individual women's plantations. These trees contribute to a more balanced diet and nutrition, especially for children and women.

- Women, organized in groups, carry out horticultural activities for nutritional security and income generation. For the 2016 season, women's groups produced melon, okra, aubergine and chili, generating an income of 50,610 CFA francs.
- A women's value chain promotion committee has been set up to transform baobab fruits into powder, with the aim of generating income and enrich children's diets. In 2016, 38.5 kg of baobab powder was sold, representing 192,500 FCFA in gross income for the women's association. This activity creates jobs and helps combat the rural exodus of young people (Sanogo et al., 2016).

4.4. DELTA: Local Economic Development and Agroecological Transition Program

Secondary research: Yes

Institutions interviewed: SAED

Status: Ongoing (2020-2025)

Objectives: To contribute to the improvement of food security and the sustainable economic development of the rural territories of the Senegal River Valley. The project is working towards Strengthening the economic performance of agricultural systems, (2) Improving local skills to increase the resilience of the territory and manage its resources sustainably, (3) More equitable access to natural resources, infrastructure and services and enhanced social cohesion.

Components: (1) Support to the communes and to the animation of the territories, (2) Realization of productive investments in the agricultural and livestock sectors, (3) Support to the economic actors of the agro-sylvo-pastoral sectors, (4) Cross-cutting support to SAED and its partners, (5) Programme management and coordination.

The geographic focus/coverage:

Regions: Saint-Louis and Louga

Departments: (1) Dagana, (2) Saint-Louis, (3) Louga

Communes: (1) Diama, (2) Ronkh, (3) Bokhol, (4) Gandon, (5) Ndiébène Gandiol, (6) Fass, (7) Keur Momar SARR, (8) Syer, (9) Mbane, (10) Nguer Malal, (11) Mboula and (12) Ngnith.

The target beneficiaries: Farmers and local communities.

The stakeholders involved in the project's implementation including their roles: The actors responsible for planning and implementation are SAED and a project coordination unit (PCU) of the supervised by the MAERSA. The project is funded by the *Agence Française de Développement* (AFD).

Key outcomes of the interventions: No outcomes have been reported thus far.

4.5. Integration of climate resilience in agro-pastoral production for food security in vulnerable rural areas through the farmer field-school approach

Secondary research: Yes

Stakeholder institutions interviewed: CSE

Status: Completed (2015-2020)

General objective: To improve community food security and nutrition through the development of livelihoods resilient to the effects of climate change. It is working towards (1) facilitating the use of agro-climatic information and the adoption of climate change adaptation practices by agro-sylvo-pastoral producers, and (2) improving the capacity of the agro-sylvo-pastoral sector to cope with climate change, through the integration of adaptation strategies into development policies and programs.

Components: (1) Development and refinement of climate change adaptation strategies and tools based on improved or new knowledge and piloting of climate change adaptation practices in agro-sylvo-pastoral systems, (2) Capacity building and dissemination of climate change adaptation strategies, technologies and best practices to small-scale agro-sylvo-pastoral producers through a growing network of infield trainingships, (3) Integration of climate change adaptation strategies into policies, programs and projects, development framework of the agro-sylvo-pastoral production sectors at the national level and in the vulnerable areas of the project, (4) Coordination and monitoring evaluation (FAO, 2018).

The geographic focus/coverage:

- 3 agro-ecological zones: (1) Sylvo-pastoral zone, (2) the Groundnut Basin and (3) Eastern Senegal
- 7 administrative regions: Louga, Matam, Diourbel, Fatick, Kaffrine, Kaolack, Tambacounda)

- 17 communes

The target beneficiaries: Farmers, local communities and local authorities

The stakeholders involved the project's implementation including their roles: The institutions responsible for planning activities is the Centre de Suivi Écologique (CSE). The implementing actors are the Ministère de l'Agriculture et de l'Équipement Rural (MAERSA), Ministère de l'Élevage et des Productions Animales (MEPA), Ministère de l'Environnement et du Développement Durable (MEDD), Agence Nationale de la Grande Muraille Verte (ANGMV), Ministère du Tourisme et des Transports Aériens (MTTA), Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM), Agronomes et Vétérinaires sans Frontières (AVSF), Innovations Environnement Développement (IED/Afrique), Symbiose, Farmer-based organisation. The project is funded by the Global Environment Facility (GEF). The FAO is responsible for evaluation and monitoring activities (FAO, 2018).

Key outcomes of the interventions: The expected results were the following:

- Better knowledge of the threats induced by climate change,
- Adoption of agro-climatic information, innovations and best practices for adaptation to climate change by agro-sylvo-pastoral producers,
- Integration of traditional production practices and improved and adapted production systems,
- Adoption and scaling up of specific strategies to build resilience to climate change in agro-pastoral systems,
- Strengthening national institutional capacities to develop and integrate climate change adaptation strategies, and
- Establishment of a National Resilience Fund.

4.6. FAR: Resilient Women and Agriculture

Secondary research: Yes

Stakeholder institutions interviewed: None

Status: Ongoing (2019-2025)

Objectives: The FAR project aims to improve the well-being and resilience of farming households in the face of climate change in the regions of Kolda, Sédhiou and Tambacounda, through the sustainable intensification of irrigated rice, banana, and vegetable crops.

Components: **(1)** Transformation of relations between men and women and between age groups, **(2)** Production, dissemination and use of reliable climate information, **(3)** Improving local governance and regional water management.

The geographic focus/coverage: Regions: Kolda, Sédhiou and Tambacounda

The target beneficiaries: Farmers (specifically women farmers), young farmers

The stakeholders involved in the project's implementation including their roles: The main planning and implementing actors are assembled in a PCU-consortium formed by the Canadian Centre for International Studies and Cooperation (CECI), the Association for Development Cooperation (SOCODEVI) and the Canadian organization OURANOS. The implementing partners are OFAD-Nafoore (Training and Development Support Organisation), Enda-eau, RADI (African Network for Integrated Development), GADEC (Action Group for Community Development). Other technical implementing partners include AFAO (Women's Association for West Africa), CSE, ANACIM, UCAD (Cheikh Anta Diop University) and UASZ (Ziguinchor University). The project is funded by Global Affairs Canada. The evaluation and monitoring of the project is done by the PCU-consortium.

Key outcomes of the interventions: The expected results are the following:

- 3,000 people (50% women) trained in their rights, leadership, gender and intergenerational relations,
- 100,000 people reached by 6 awareness campaigns on gender and intergenerational inequality issues,
- 4,000 people (50% women) trained in entrepreneurship, farm management and climate-smart practices,
- 25 specialists from national partners trained to produce and disseminate reliable climate data, in conjunction with local knowledge, and
- 400 people trained in sustainable and equitable water management.

4.7. PARERBA: Project to Support the Reduction of Rural Emigration in the Peanut Basin

Secondary research: Yes

Stakeholder institutions interviewed: Enabel

Status: Completed (2018-2022).

Objectives: The project aims to develop sustainable family farming, contribute to the development of the rural economy, create employment agricultural value chains and ensure food security. These various objectives mainly aim at stabilizing the rural population, particularly young people (Cathala & Manga Badji, 2020). To achieve this, there are two main areas of intervention:

- a. Enhancing the value of hydro-agricultural facilities built by BARVAFOR (*previous Enabel project on the construction of retention basins and the development of boreholes in the regions of Diourbel, Fatick, Kaolack, Kaffrine and Thiès*) in the twenty communes of the five regions of the Groundnut Bassin in order to increase production and productivity through water management and better integration into agricultural sectors.
- b. Mobilizing young men and women around the creation and sustainable development of activities, in a modern and innovative way, in various aspects linked to agricultural sectors.

Specifically, the project aims to build irrigated perimeters and construct local operating rules that encourage the inclusion of young people, (2). To promote an integrated water resource management approach and sustainable land management practices, (3). To improve the productivity and competitiveness of family farms in the rice and market gardening sectors, (4). To develop rural micro-entrepreneurship and youth employment in the value chains of promising agri-food sectors, (5). To promote the professional integration of young people in agri-food SMEs (Cathala & Manga Badji, 2020).

The geographic focus/coverage: The project intervenes in the agro-ecological zone of the Groundnut Bassin. The regions in which the project operates are (1) Thiès, (2) Diourbel, (3) Fatick, (4) Kaolack and (5) Kaffrine.

The target beneficiaries: Farmers, Private Sector, Government.

The stakeholders involved in the project's implementation including their roles: The institution responsible for planning is the PARERBA PCU of Enabel. The implementing partners are ISRA, ANCAR, ARD (Regional Development Agency), World Vision, Eclasio as well as local cooperatives. The project is facilitated by the support of local authorities. The project is funded by the European Union (EU).

Enabel monitors and evaluates the project¹⁷.

Key outcomes of the interventions: The expected results were the following:

- Productive water is made available on a long-term basis to farmers to make better use of their land resources throughout the year.
- Producers organize themselves to sustainably increase their production and find outlets for their products (horticulture and rice).
- Trained young women and men are creating or developing micro-enterprises in agricultural sectors.
- Lessons learned are capitalized on and communicated.

Under PARERBA, the use of pesticides has been banned in the farming perimeters in which the project intervened, with the promotion of organic inputs as an alternative. With ANCAR, the farmer field school (FFS) approach was adopted, with investment in equipment and the recruitment of trainers. The FFS approach has had a significant effect on the adoption of sustainable agriculture in the farming perimeters of the project. At the end of the 5-year project, the evaluation showed improved adoption of sustainable agricultural practices with 90% of farmers having adopted the new farming practices. However, there are questions regarding the sustainability of adoption by farmers.

The project has developed 3 types of opportunities for young people, and migrants from the Groundnut Basin (Thiès, Diourbel, Fatick, Kaolack and Kafrine) by integrating SMEs into the agri-food system, supporting young people in micro-entrepreneurship and creating irrigated perimeters enabling around

¹⁷ <https://open.enabel.be/en/SEN/2257/p/projet-d-appui--la-rduction-de-l-emigration-rurale-et--la-rintgration-dans-le-bassin-arachidier.html>

3,500 producers in this area to grow horticultural crops in the off-season or rice during the raining season in the lowlands. This involved 400-hectare spread over 40 perimeters.

Two NGOs (World Vision and Eclasio), which are very active in the agroecological transition, were recruited to provide local follow-up to support farmers in adopting the techniques learned in the FFS. PARERBA also collaborated with ISRA in the communes of Diofior and Fimela to restore saline land and grow rice on 400 ha. Some innovative solutions proposed by the project include new varieties adapted to saline soils and training courses to enhance local knowledge. ISRA intends to capitalize on PARERBA's results in greater detail. Work has been carried out on water management with local authorities and the Regional Agency for Development (ARD) on the development of 8 watersheds for rice cultivation and better management of water resources. On the question of water management at the perimeter level, important work is being done with the Ministry of Water and Sanitation, which will enable better adoption of practices and better conservation of water resources. A cooperative is in charge of water management at perimeter level, with the price per cubic metre set by producers. The paid-for water service enables perimeter maintenance and better management of water resources (Cathala & Manga Badji, 2022).

The programme is aligned with the development strategies and policies of Senegal, Belgium, and the European Union (EU). More overall, the action corresponds to the needs of the population and the country, considering the importance of agriculture for job creation, food security, the fight against poverty and economic and economic growth. In addition, developing irrigated agriculture is vital for Senegal's agricultural sector, and support for the horticultural sector is particularly relevant from an economic point of view, as it offers strong potential in terms of markets and value added. Promoting job creation through support for the development of small and medium-sized enterprises (SMEs) also seems highly relevant, given that SMEs account for more than 90% of the economic fabric (Cathala & Manga Badji, 2020).

4.8. NTR: New Resilient Terroirs

Secondary research: Yes

Stakeholder institutions Interviewed: SE-CNSA

Status: Ongoing (2018-2026)

Objectives: By 2035, the most vulnerable households have autonomous access to sufficient, safe and nutritious food due to the sufficient quantity of safe and nutritious food as a result of the formal adoption of effective strategies for minimizing the risks related to shocks and climate change.

Components:

(1) Land resources information system (SIRT): The SIRT is a system developed using modern information and communication technologies to provide information on the specific resources - biophysical, social and economic - found in each of the terroirs defined as such, in terms of comparative advantages. It is also a tool that aims to integrate this knowledge for better decision-making in the field of food security and resilience. Information from SIRT will feed into the other two components.

(2) Resilient Family Farms (RFF): A resilient family farm (EFR) is a physical and social entity made up of a household of 5 to 8 people, with an area of at least one hectare. EFRs are set up to help each of these households gain access to a perennial water source (a well equipped with a solar device, or a motor-driven pump on a stream) enabling year-round agricultural activity (RPCA, 2018).

(3) Mobile agricultural services units (UMSA): Mobile Agricultural Service Units (UMSA) are economic entities run by young people previously trained in agricultural business incubators (ANIDA, ANA, etc.) and training centres. These young people will be identified in the different areas of interventions. The selection criteria will be based primarily on their commitment, as demonstrated by visible grassroots initiatives in the field. Each UMSA will comprise two to three young people and will be equipped with the appropriate logistical resources to ensure rapid service to the EFRs (RPCA, 2018).

The geographic focus/coverage: The project was launched in the Sédhiou region but will gradually be extended throughout the country.

The target beneficiaries: Farmers, Communities, and local authorities.

The stakeholders involved in the project's implementation including their roles: The main Institution responsible for planning and implementation is the SE-CNSA. The partner institutions responsible for implementation are MAERSA, ANCAR and PRODAC (community agricultural domains programme).

The project is funded by the EU. SE-CNSA is also responsible for evaluating and monitoring the project.

Key outcomes of the interventions:

- Improving the living environment and conditions in the terroirs by creating the conditions that make it worthwhile for people to stay there.
- Promotion of a dynamic local economy through the production of consumer goods and the securing of livelihoods.
- Promoting dialogue between territories by exchanging comparative advantages (RPCA, 2018).

5. CONCLUSION

This report provides an overview of how transformative adaptation interventions were selected and the and an assessment of the stakeholders involved in planning, monitoring and implemented the identified interventions. Interviews with stakeholders revealed that although the institutions identified through this mapping exercise share similar project goals, they try to achieve these goals within different operational and institutional frameworks resulting in the lack of harmonization of tools used to assess the orientation of the various interventions. This also results in the duplication of effort. Ensuring that all stakeholders at across all administrative levels and sectors have the same level of information to act together remains an urgent priority.

In addition to different operational frameworks, lack of access to relevant data remains a barrier to decision-making and the sound governance of adaptation planning and implementation. Cost remains a primary challenge to critical data such as rainfall, temperature. The integration of climate change adaptation into planning documents at national, sectoral and local levels, and integrating climate change adaptation into budgeting also remains an ongoing challenge. Capacity and climate financing are needed to provide the tools to integrate adaptation into planning documents. Training and capacity building is necessary because teams and the political system often change, resulting a restart at the beginning of each political cycle. Sometimes, there is a lack of interest on the part of certain authorities when they come to power thus threatening the sustainability and ownership of interventions.

The overall aim of the Governance 4 Resilience of ClimBeR WP4 is to develop a multi-scale and polycentric governance model (MPG) that improves coordination of interventions in selected countries. Addressing these challenges can help identify mechanisms and policies that support the implementation and

adoption of adaptation interventions. It emphasized the need for further collaboration between institutions working in these areas. Critical to collaboration is the establishment of operational frameworks across administrative levels and sectors that are beneficial to all stakeholders in ensuring efficient implementation of interventions. At the national level, the governance framework is provided by the Ministry of the Environment, through the *Direction de l'Environnement et des Etablissements Classés* (DEEC), which collaborates with COMNAC. DEEC supports the ministries on all climate change-related issues. In addition, there are the sectoral ministries with which DEEC has tried to set up sectoral committees to support the process. Deepening these governance structures that enable cross-sectoral and multi-stakeholder collaboration is critical in enhancing progress in adaptation planning and implementation in Senegal¹⁸.

¹⁸ <https://www.secnsa.sn/nouveaux-terroirs-resiliants/>

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