



# Strengthening Climate Resilience through People-Centered Approaches:

## Farmer Field Schools and Dimitra Clubs in Senegal

PROJECT FULL NAME	COUNTRY & REGION	EXECUTING AGENCIES	IMPLEMENTING AGENCY		
Mainstreaming ecosystem-based approaches to climate-resilient rural livelihoods in vulnerable rural areas through the Farmer Field School methodology		Ministry of Agriculture and Rural Development (MAER)	Food and Agriculture Organization of the United Nations (FAO)		
			IMPACT AREAS	<ul style="list-style-type: none"> <li>Climate change adaptation</li> <li>Food security</li> </ul>	
		PROJECT TYPE: <b>FSP, LDCF</b>	GEF Project Grant <b>\$ 6,228,995</b>	FOCAL AREAS	<ul style="list-style-type: none"> <li>Climate Change</li> </ul>
		GEF PERIOD: <b>GEF-5</b>		Co-financing Total <b>\$ 24,607,385</b>	

### Summary

Senegal’s productive sectors are progressively being exposed to the effects of climate change, with direct consequences for food and forage crop yields. Farmers and agro-pastoralists are subjected to increased risks and have to adapt their agricultural and pastoral systems to a hotter and drier future. Women face more constraints than men in being able to respond appropriately to these new challenges, as they have less access to resources, information, and participation in decisions. The resilience of people to climate change was enhanced by the project by building the capacity of communities and women through two innovative, people-centered approaches—Farmer Field Schools (FFS) and Dimitra Clubs,<sup>1</sup> and by strengthening

agro-climate information communications and setting up a climate resilience fund for scaling up project achievements.

The project operates in 17 communes located in seven administrative regions across three ecogeographical zones of Senegal and supports climate change mainstreaming and integration of FFS approach in national policies and programs. Key lessons learned from this project are related to the methodological alliance between FFS and Dimitra Clubs towards community and women’s empowerment, strong partnership with relevant government agencies, and effective engagement with Civil Society Organizations (CSOs) and community radio stations.

<sup>1</sup> **Farmer Field Schools (FFS)** are non-formal education processes characterized by hands-on group learning in the field that builds on local knowledge systems, tests and validates scientific concepts, and fosters group cohesion and community decision-making (FAO 2019). The **Dimitra Clubs** constitute a community-led and gender-transformative approach that facilitates rural community empowerment. In sub-Saharan Africa, they triggered changes in gender roles as well as substantial improvements in rural livelihoods, climate change adaptation, nutrition, social cohesion, and community governance.

**Figure 1** Setting up stone barriers through Dimitra Clubs' collective action as a part of climate change adaptation by the villagers of Saré Boubou (Tambacounda region) @FAO/ Yannick De Mol



## Results, Global Environmental and Adaptation Benefits

By June 2020, the project had achieved the following global environmental benefits and climate change adaptation results:

- 100 percent of targeted farmers and herders (12,576 producers) were trained in climate change adaptation techniques and tools, including 7,335 women (58 percent), through 560 Farmer Field Schools (FFS) and Agro-Pastoral Field Schools (APFS),<sup>2</sup>
- Household incomes and productivity of field school participants have increased up to 20 percent using climate change adaptation (CCA) practices and agro-meteorological information.
- 503 Dimitra Clubs (120 percent of end-of-project target) were created in 142 villages across 11 municipalities with 15,000 members and over 1,000 leaders, the majority of them women. Dimitra Clubs enabled their members (women, men, girls, boys) to enhance their active participation in local development and governance, to improve women's leadership, and to guarantee the wide dissemination and ownership of CCA techniques and tools.
- An information management and exchange system of agro-climatic data was developed under the technical coordination and supervision of the National Agency of Civil Aviation and Meteorology (ANACIM). Eleven local multidisciplinary working groups were installed in the three eco-geographical zones, and around 10,000 farmers and breeders received agro-climatic information through the groups, including through voice messages in local languages.
- The National Agency for Agricultural and Rural Council (ANCAR), the project's partner institution, adapted FFS methodology for their activities, which facilitate the integration of the FFS approach into their advisory system, dissemination of CCA practices, and institutionalization of FFS approach in Senegal.
- A National Climate Change Resilience Fund is operational and has doubled available fund by collaborating with

<sup>2</sup> The APFS approach is a participatory learning model where agro-sylvo-pastoral groups learn through observation and experimentation within a community. This approach relies on the extensive experience of FAO in FFS and Pastoral Field Schools (PFS).

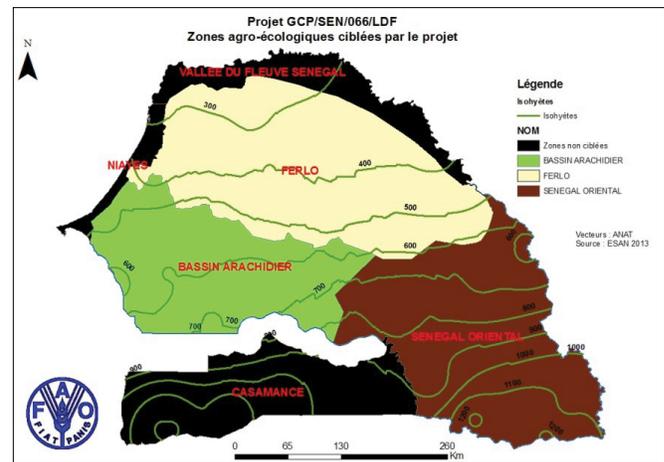
existing funding mechanism, the National Fund for Agro-Sylvo-Pastoral Development (FNDASP).

## Environmental Challenge

In Senegal, more than 80 percent of rural people depend on winter rains to ensure their food security. Senegal's agricultural sector is dominated by small subsistence family farming. Less than 2 percent of harvested land is irrigated. Livestock is the second pillar of Senegal's economy and involves about 350,000 families, or a total labor force of about 3,000,000 people (over 23 percent of the national population), primarily the most vulnerable. Thus, climatic disturbances have notable effects on the lifestyles of these populations and their socio-economic activities. This means that all households are facing permanent risk situations and high vulnerability due to the lack of means at their disposal to deal with shocks.

An analysis of climate change shows that the spatial and temporal variability of rainfall in the Sahel is among the largest in the world and is a major constraint that farmers and agro-pastoralists have adapted to with extensive farming systems. Therefore, climate change is not just an environmental problem; it also affects the food security of the most vulnerable people, including women who depend on agriculture and agro-pastoral production as their main livelihood. While seeking to improve their food and nutritional security and increase their incomes, it is important to strengthen the capacity of agro-sylvo-pastoral producers to withstand shocks and adapt to climate threats. The main barriers to effectively addressing climate change challenges include: insufficient awareness of climate change risks, best practices, and strategies among institutions, producers, and consumers; lack of capacity in adopting drought-resilient agropastoral and agroforestry practices; and weak policies and programs to confront climate

change in key productive sectors. The project filled these gaps and reduced climate change-induced threats by introducing CCA dimensions into FFS and Dimitra Club approaches.



**Figure 2.** Map of the six eco-geographical zones of Senegal. The target areas of the project are three ecogeographical zones: the Sylvo-Pastoral Zone (yellow area), the Groundnut Basin (green area) and the Eastern Senegal area (brown area)<sup>3</sup> (Source: ANACIA & CSE)

## Integrated Approach and Key Features of the project

The project was developed based on successful approaches in neighboring countries (Mali, Niger, and Burkina Faso) to mainstream climate resilient approaches through the FFS methodology. The project scaled up the FFS approach that has been endorsed at the national level by various governments in the region. In Senegal, through this project the FFS approach was extended to include both irrigated and rainfed production systems, including agro-sylvo-pastoral contexts.

### Capacity Building through Farmer Field Schools; Hands-on Group Learning in Field

To mainstream CCA into local planning, the project took advantage of applying the successful FFS approach<sup>4</sup> in Senegal. The FFS is supported by a trained

<sup>3</sup> The Sylvo-Pastoral Zone of Ferlo is one of the largest areas of the country with an area of 55,561 km<sup>2</sup> but with only 4 percent of arable land. Due to the severe nature of the environment, the main production system is based on extensive livestock transhumance (22 to 30 percent of the national livestock). The Groundnut Basin Area covers an area of 46,367 km<sup>2</sup> (57 percent arable land). Two-thirds of the production of millet and groundnuts (main national cultures) is from this area. The Eastern Senegal Zone is 51,958 km<sup>2</sup> (10 percent arable land). Mining is the predominant activity in its northern part, while pastoralism is dominant in its southern area. It also provides nearly all of the fuel-wood consumed in large urban centers.

<sup>4</sup> The FFS approach enhances understanding of complex agro-ecosystems, co-produces innovation, empowers farmers and sharpen the farmers' ability to make critical and informed decisions on production. An FFS group comprises 20-30 farmers, livestock producers, or fisherfolk from the same locality who are interested in learning about improved practices. With this approach, the project supported a cascade of capacity building in rural areas through (re-)training master trainers, facilitators of FFS, and FFS participants in a village on CCA agriculture and pastoral practices.

facilitator who meets with farmers regularly during the growing season/productive cycle, often on a weekly basis, to carry out experiments in the field. Participants identify production problems, brainstorm potential solutions, then set up study plots to compare local practices and improved practices. In this way, farmers and agro-pastoralists could learn-by doing the agroecological dynamics and the improvement of production, and try out innovative approaches to adopt CCA methods in their own fields. The project successfully integrated CCA and nutrition into the FFS curricula, which were adapted to the specificities of each ecological zone. Through FFS training sessions, field studies were carried out to assess with farmers the best options in term of cost reduction, yield, reduction of environmental pollution, enhancement of ecosystem services, and optimization of natural resources with the main objective of reducing climate change impact.

In collaboration with the Ecological Monitoring Center (CSE) and ANCAR, 52 best practices were developed and adapted to the different agroecological contexts, specifically in three key areas: natural resource management and biodiversity restoration; improvement of animal production and; improvement of agricultural production systems.<sup>5</sup> For instance, in the sylvo-pastoral zone, 840 livestock breeders increased their capacity to produce newly-introduced elephant grass to cope with the lack of forage. Elephant grass yields are around 20 tons per hectare of dry forage for one harvest, with a possibility to harvest five times per year. 350 breeders increased their capacity to improve straw through urea treatment, which increased nutritional value by 50 percent. 230 breeders have improved skills of the techniques for manufacturing multi-nutritional blocks. In the Groundnut Basin Area and Eastern Senegal zone, 8,376 farmers, of which 60 percent are women, trained through FFS adopted CCA practices such as early seed production, water management, and mulching, seedling, and organic products

manufacturing.<sup>6</sup> These best practices to cope with climate change are now integrated into the national action plans to support extension services and trainings to strengthen the technical and managerial capacity of small producers. In addition, FFS activities can lead to changes in gender dynamics and in decision-making within households. For example, community village chicken coops set up by 120 women saw death rates drop from 63.6 percent to 18.2 percent and egg laying increase from 79.4 percent to 169.7 percent compared to traditional chicken coops.

### **Community engagement for empowerment and women's leadership through the Dimitra Clubs**

The Dimitra Clubs gather informal groups of rural women and men of all ages voluntarily to discuss and find solutions to common problems, including climate change effects, using their own resources and collective efforts. By promoting a rural transformation led by rural communities themselves, the Dimitra Clubs empower communities and facilitate community ownership of actions, thereby enhancing sustainability. It is an excellent approach to boost leadership of women and youth in decision-making processes, improve social cohesion and gender equality, and facilitate access to information and knowledge to the most vulnerable. Fatou Ngom, a woman member of the Dimitra Clubs, village of Kouthia Farindella in Tambacounda region said: "I am truly grateful to the Dimitra Clubs. Before I did not use to attend the village meetings. Women were not informed on the issues and activities discussed and carried out by the community. We, the women, did not have the right to speak. Now, thanks to the clubs, we dare to speak in public and give our opinion."

Local leaders and governments valued and respected community led local activities of the Dimitra Clubs. For example, after one year of activities, the Dimitra Clubs in the village of Saré Boubou set up stone barriers to preserve arable land against erosion with the

<sup>5</sup> Exchanging FFS and APFS experiences on CCA practices, at least 11 good CCA practices for agro-pastoralists have been identified: (i) use of forage bean and elephant grass to cope with lack of forage, (ii) water management with mulching and zai practices, (iii) short cycle seed production, (iv) stone line to prevent soil degradation, (v) promoting organic fertilizer, (vi) crop association; (vii) manufacturing multi-nutritional blocks; (viii) urea treatment to improve nutritional value of straw; (ix) establishment of improved village chicken coops to diversify income; (x) establishment of small vegetable plots to improve nutrition; (xi) multi nutritional blocks to improve livestock feed in the dry season; and more.

<sup>6</sup> 112 ha of millet production are planned for this wintering 2020 Multiplication of short cycle seeds with high nutritional value: peanuts (7 ha), millet (5 ha), corn (3 ha), sorghum (3 ha), bio fortified millet production (75 ha) and rain-fed rice (5 ha) in addition to marketing support with partner producer organizations.



**Figure 3:** Village Assembly where the ideas of Dimitra Clubs are shared and discussed in Tambacounda @De Mol/FAO

technical support of the FFS and the Institut National de Pédologie (National Institute of Soil Science). The Dimitra Clubs also helped resolve land-use conflict between farmers and herders through dialogue. For instance, farmers and herders agreed to create a space where animals can wait until farmers finish their harvest and before herders bring their animals back to their village before the dry season. As a result of FFS and the Dimitra Clubs, 150 women from five villages in Tambacounda region were encouraged to have collective fields to improve their nutrition and income, and access to water was greatly improved when the community was mobilized by the Dimitra Clubs to participate in cleaning the wells or making borings for water supply in ten other villages of the region.

### **Setting up sustainable mechanisms in climate resilience fund**

The project set up a resilience fund for preparing, financing, and monitoring the implementation of

proposed sub-projects for producer organizations such as income-generating activities and strengthen the economic viability of households. To make the fund sustainable, the project collaborated with an existing national development fund, FNDASP, which provided multisectoral technical support to producer organizations, including implementation of CCA community-based plans. With contributions from the State via the Finance Law and from agro-pastoral production sector via levies, FNDASP's capital facilitates the pooling of partners' financial resources to double the initial allocation of the climate resilience fund. The FNDASP resilience fund is operational, and its revolving fund is accessible by producer organizations to support collective initiatives relating to adaptation to climate change. Ten producer organizations are funded through the resilience fund and their CCA projects are ongoing.

This innovative financing mechanism facilitates the scaling up of project achievements and promoting



**Figure 4:** Village of Saré Gueda, woman leader of one of the Dimitra Clubs  
@De Mol/FAO

communities to be lead actors of CCA activities. For producer organizations to get the technical advice and support for their sub-projects in transparent manner, three supervision entities were installed: National Approval Committee to approve the sub-projects based on the technical advice; Regional Evaluation Committees to provide technical opinions on the sub-projects; and Local Animation Committees to support producer organizations in the identification, formulation, and advisory throughout implementation of their sub-projects.

## Lessons Learned

### People centered approaches leading to inclusive local engagement and climate action

The methodological alliance between FFS and Dimitra Clubs enabled the enhancement of technical skills, community empowerment and women's leadership for resilience and climate change adaptation. FFS and Dimitra Clubs are socially inclusive because of their focus on smallholders, who are often among those more vulnerable, and their methods contribute to improving livelihoods and reducing rural poverty. Both participatory approaches were complementary: while FFS is transferred through the Dimitra Clubs to non FFS members and the whole community, Dimitra Clubs disseminated newly introduced practices to other villagers, including women and youth. There is around one FFS active in a village during agricultural/pastoral seasons, while there are four to six Dimitra Clubs in a village, and they are active all year. Learning from FFS is transferred through the Dimitra Clubs to non FFS members and the whole community, amplifying the impact of FFS through members while strengthening women's role and knowledge exchange within a village.

FFS and Dimitra Clubs empowered local communities to strengthen their resilience against shocks like climate change and pandemics. Moussa Diop, Club Dimitra Leader at Koulor village said: "The project through the Dimitra Clubs did not come to solve our problems, but it shows us how to lift our constraints by our own means and our capabilities. With the Dimitra Clubs, transparency and communication are strengthened within the community and this is the way of our stability and development." These dynamic and community-driven platforms have proven to be successful approaches to encourage behavioral change and agile responses to threats. FFS and Dimitra Clubs were active and engaged on COVID-19 awareness through their engagement with the community and their connection on WhatsApp for information sharing. The project demonstrates how people in villages can become real agents of change through participatory approaches.

### **Strong partnership with government agencies enabling climate mainstreaming and sustainability of outcomes**

The project was successful thanks to strong partnerships with relevant government agencies including ANACIM, ANCAR, CSE, Department of Environment and Classified Establishments and FNDASP. Harnessing the different technical expertise of these agencies was critical for: analyzing climate information; leading the multidisciplinary working group; broadcasting meteorological information to farmers and field school facilitators; strengthening farmer organizations; capacity building on adapted seed production; providing extension services with CCA; following up with farmers trained through field schools; climate vulnerability analysis; characterization of pastoral units; capitalization of CCA practices; mapping natural resources in sylvo-pastoral zones; mainstreaming CCA in national policies and local development plans; and operationalization of the resilient funds and capitalization of the project results.

While working with local farmers and herders on the ground, the project simultaneously mainstreamed these CCA good practices into local and national policies, strategies, and action plans to scale up tangible results at both field and policy levels. The project established a high-level intersectoral group in the National Climate Change Committee, which then defined and adopted the CCA strategies and resilience agenda to be mainstreamed into policies, programs, and projects based on experience on the ground. The Regional Climate Change Committee was revitalized through a capacity-building program based on: (i) the integration of the climate change dimension in planning and budgeting, (ii) the development of a feasible plan of action; and (iii) the preparation of financial resource mobilization strategies for a regional policy dialogue on climate change to monitor, evaluate and submit CCA projects.

As a result, the climate change dimension, together with gender, migration, and nutrition, was integrated into the National Guide for Local Planning for the communal development plans. A policy brief “Agro-sylvo-Pastoral sector & climate change in Senegal”

was prepared, eight action plans integrating CCA strategies were developed for producers organizations in the Sylvo-pastoral zone, and nine action plans were developed in the Groundnuts basin and Eastern Senegal, resulting in 27 Farmers Organizations integrating CCA strategies.

### **Effective engagement with CSOs and community radio stations helping outreach to communities**

Collaboration with a variety of Civil Society Organizations (CSOs) was vital for successful implementation of the innovative approach such as the Dimitra Clubs. Trusted CSOs initiated dialogues with villagers and explained the Dimitra Clubs concept, and partnership with community radio stations in rural areas helped Dimitra Clubs mobilize local communities and amplify the voice to women, youth, and other vulnerable people. Local radio stations, which broadcast in local languages, play a pivotal role as a source of information in local communities and helped Dimitra Clubs members reach broader audiences by broadcasting their good practices and results obtained.



**Figure 5:** Saré Boubou, Tambacounda Region @De MoI/FAO



Figure 6: Welcoming Dimitra Clubs members in a village in Koussanar @De Mol/FAO

## References and multimedia

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