USAID/COMFISH Project

PENCOO GEJ

Collaborative Management for a Sustainable Fisheries Future in Senegal

TECHNICAL REPORT

ON

FISHERIES EXTENSION PROGRAMS IN SENEGAL

RESULTS OF A STUDY ON FISHERIES EXTENSION PROGRAMS IN SENEGAL

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COASTAL RESOURCES CENTER

Executive summary

This report on fisheries extension presents the results of the study we conducted based on a literature review, face to face interviews, field visits and an assessment of the lessons learned.

The report includes an introduction and four sections, namely the (i) Background and Rationale, (ii) Analysis of Extension, (iii) Major Lessons Learned, and (iv) Key Recommendations and action plan outlines.

The introduction underlines the importance of fisheries in Senegal and examines the historical apects of the socialist option, chosen at the country's independence, to make rural community organizing and education a first key priority. The priority shifted subsequently to the provision of materials and equipment to stakeholders in the Agriculture sector as a whole, and fisheries in particular, and to the ownership of innovative technologies which were considered to be useful for the country's development and its primary sector. By taking these options, the Senegalese authorities realized quite early that programs such as extension, training and capacity building were high priorities in education and transfer of new technonologies to the rural communities.

Section one, presents the background and rationale of the study. It highlights the status of fish stocks at the global level and in Senegal, and concludes that resource availability is on a downward trend, as shown by FAO reports where: 52% of fish stocks are fully exploited, 19% are overexploited and 8% are depleted. In Senegal and the world at large, measures have been taken to reverse this trend, especially with new policies to end overfishing and restore degraded habitats. These measures consist in placing greater emphasis on fisheries management, establishing consultations and co-management with the stakeholders and communities concerned, and enhancing fisheries governance and the science-based decision making process. It was in this context that the United States of America, through its International Development Agency (USAID), decided to provide support to Senegal, through the COMFISH project, in order to enhance the country's fisheries sector. The COMFISH project is a collaborative management initiative whose success is based on outreach and training local stakeholders to gain ownership of the innovative techniques and technologies demonstrated to them. Before the launch of the COMFISH project, Senegal had embarked on a number of Extension initiatives with results that were positive in many respects and not quite as successful in some. This was why the Department of Fisheries requested an assessment of Extension in the Fisheries sector to highlight useful lessons learned before "developing new strategies and programs in this area with the support of the USAID/COMFISH project".

Section two, reviews fisheries extension in Senegal and discusses the various interpretations of the concept of Extension in relation to outreach, training, and capacity development. It then takes an overview of the evolution of extension and identifies the different State and non-State structures for extension, looking at their organizational framework and their structure, the programs implemented and major results obtained, as well as their strengths and weaknesses. The problems and notion of extension structures are also discussed, and their various programs presented and assessed.

Section three presents the results of our stakeholder surveys and field visits. On this basis, we found that while Senegal has demonstrated a great deal of initiatives to develop education programs since its independence, fisheries extension has been left without proper structures. Alongside this, poor programming and management of Extension activities has been observed. Moreover, goal setting and resource requirements have been unclear, or imprecise. There are numerous initiatives without

synergy, coordination, proper monitoring and evaluation. This undermines effectiveness and disrupts sustainability. Some State structures as well as Non-Governmental Organizations and Professional Organizations have been working to correct this, especially in certain projects. These efforts have produced some encouraging results. For example, more stakeholders were engaged in the sustainable management of fisheries resources (especially through the observance of biological rest periods (closed seasons) for certain species, the prevention of juvenile captures and IUU fishing), and the use of innovative fishing techniques like octopus pots and artificial reefs.

From the findings of the Extension review and the lessons learned, we propose some recommendations and action points in Section Four. The recommendations are aimed at overcoming the obstacles to and constraints on extension, particularly by showing more political will, improving the mainstreaming of Extension in institutional and organizational plans, making available the resources required, coordinating and synergizing initiatives, and improving monitoring and evaluation. Finally, an action plan outline is proposed with some activities and priorities, which, in our view, will contribute to the successful implementation of the USAID/COMFISH project.

Acronyms

AFD	French Development Agency
ANAM	CAEP National Agency for Maritime Affairs
	Center for Assistance, Experimentation and Extension on Fisheries
CAMP	Center for Assistance to Artisanal Fisheries
CAPAS	Center for Assistance to Artisanal Fisheries in Senegal
CEP	Study and Planning Unit
CER	Center for Rural Expansion
CIDA	Canadian International Development Agency
CPEP	Center for Fisheries Enhancement, Experimentation and popularization
DITP	Department of Fisheries Processing Industries
DPCA	Department of Inland Fisheries and Aquaculture
DPM	Department of Marine Fisheries
DPM	Department of Fisheries
DPSP	Department of Fisheries Protection and Surveillance
EIG	Economic Interest Group
FAO	United Nations Food and Agriculture Organization
FENAGIE	National Federation of EIGs
GDRH	Sustainable Management of Fisheries Resources
GIRMaC	Integrated Coastal and Marine Resources Management
IGA	Income Generating Activities
IGIE IFAN EIG	Inter-professional Group Institute for Fundamental Research in sub-Saharan Africa
MPAM	Ministry of Maritime Fisheries Affairs
NGO	Non-Governmental Organization
PAMEZ	Ziguinchor Region Artisanal Fisheries Development Project
PAPA SUD	Program of Assistance to Artisanal Fisheries in the South Region
PO	Professional Organization
USAID	United States Agency for International Development
USAID COMFISH	USAID Collaborative Management Project
WWF	World Wildlife Fund for Nature

Key Persons Encountered

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ADAMA DIOP	COORDINATOR, PNI
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The lists signed by the key persons encountered and the participants in the various meetings are available at IUPA.

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STUDY ON FISHERIES EXTENSION PROGRAMS

Introduction

Senegal is a country with a strong maritime connection owing to several favorable factors, the main ones being:

- A privileged geographic location at the crossroads between major ocean currents;
- A coastline well exposed to trade winds which are conducive to the upwelling of cold, deep water rich in nutritional salts that provide food to a good number of marine species;
- The existence of expert fishermen whose long tradition of fishing has earned them a reputation and the respect of seawardiness across West Africa.
- A population with a deeply ingrained tradition of fish consumption;
- The presence of women who have developed and mastered the techniques of processing fisheries products.

This favorable situation is the reason why development in the fisheries sector has so much importance in the social and economic spheres, particularly in terms of creating new jobs, contributing to nutritional needs (supply of animal proteins), and helping to create many other lucrative activities.

The first factor of growth in Senegalese fisheries was due to the progressive establishment of industrial fishing by French tuna boat owners who came to fish for tropical tuna. At that time, artisanal fishing was mainly a means of subsistence.

After independence, the Government of Senegal decided to encourage balanced development in the two fishing sectors (Artisanal Fisheries and Industrial Fisheries), with an emphasis on artisanal fishing. To develop artisanal fisheries, the priority was placed first on organizing fishermen and providing equipment to them.

The fishing sector, which was initially under the agriculture department before it became a department on its own, embarked also on the socialist orientation that the country decided to take after independence.

The State, with this socialist orientation, put a particular emphasis on organizing fishermen into cooperatives for them to run training and/or educational and outreach programs and Extension initiatives on new techniques and technologies (e.g. for artisanal fisheries, these included: the motorization of boats, provision of various fishing equipment and accessories).

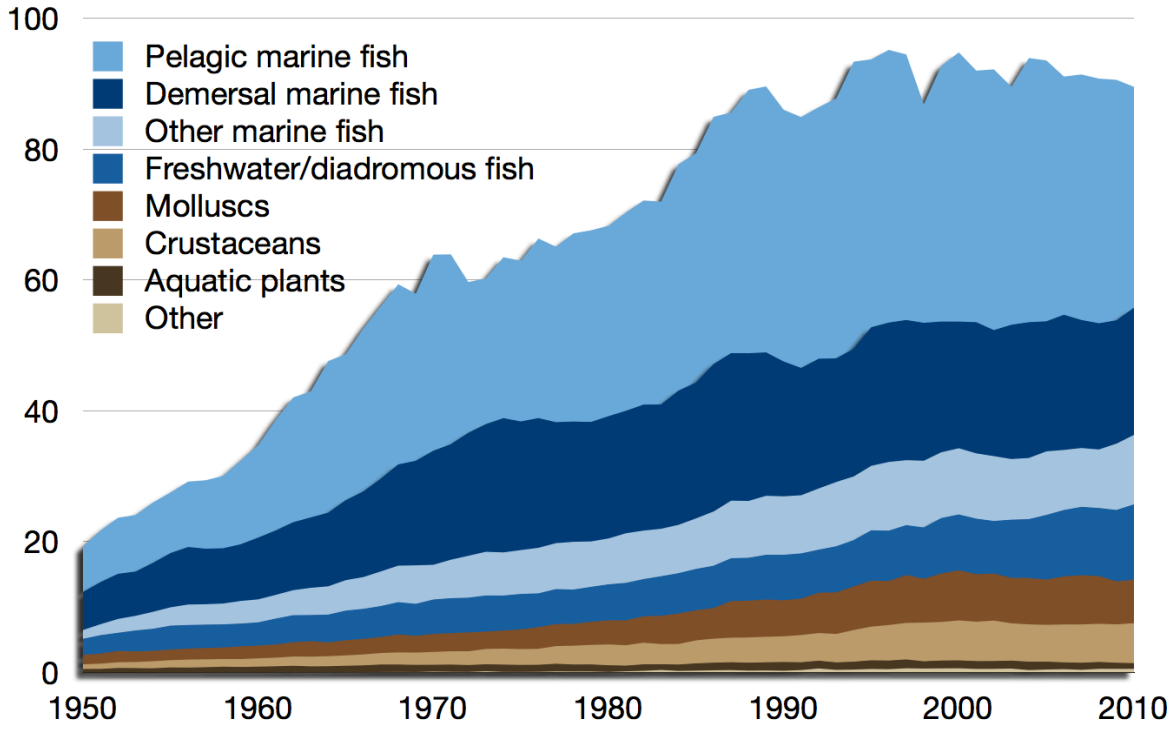
At the same time, the State, as part of the national education policy, opened schools for the training of boat conductors and trainers in the fisheries sector.

This illustrates that in the fisheries sector, Senegal took measures early enough to tackle capacity building problems in the broad sense, especially regarding aspects such as sensitization, training, and vulgarization.

Section 1. Background and Rational for the Study on Assessing Capacities for Fisheries Extension in Senegal

The trends in world fish production are as follows (FAO).

Figure 1. World production (millions of tons), capture fisheries and aquaculture



After a period of rapid and steady growth that began in 1950, world fish production actually went into a period of slower growth that even led to stagnation as from the 1990s, particularly in marine fisheries .

Even though the FAO, especially with the development of aquaculture, reports that production in 2006 hit a record figure of about 144 million tons (against an average of about 110 million tons for the previous 10 years), maritime fishing has been going through a period of crisis owing to (i) overcapacity for fishing and processing, (ii) the use of inappropriate fishing techniques and fishing gear, (iii) illegal, unregulated and unreported (IUU) fishing practices, (iv) degradation of habitats, and more recently (v) the effects of climate change.

In this regard, FAO reports also that the state of world fishing is far from being favorable: 52% of stocks are fully exploited, 19% are overexploited and 8% are depleted.

To address this, Senegal, like the rest of the world, has been taking several measures to reverse the trend, particularly through the involment of stakholders, to ensure good governance of fisheries and promoting fisheries co-management.

As mentioned in the TORs, the fisheries co-management is based on the knowledge, experiences and fisheries management initiatives by local communities, while taking into account scientific knowledge.

In the United States of America, “there is a dynamic process which combines the best scientific knowledge available with local knowledge to inform final decision making processes. This has proved to be useful in the implementation of co-management measures agreed with the stakholders, delivering exceptional results for resource sustainability and offering positive economic benefits for actors in the fisheries sector.”

“In Senegal, the Ministry of Fisheries and Maritime Affairs has always used Extension as a key medium for its socio-professional program of action for fishermen.” This is evidenced by the creation of CAMP (Boat Motorization Assistance Center), CAPAS (Center of Assistance for Artisanal Fisheries in Senegal), CAEP (Center of Assistance, Experimentation and Extensionfor Artisanal Fisheries) and CPEP (Center for Fisheries Enhancement, Experimentation and Vulgarization).

These agencies have been implementing “different forms of extension programs, based on fishing policies that did not involve stakeholders and ended up producing results below expectations.”

This is why COMFISH, in accordance with the plans of the Department of Marine Fisheries, deemed it useful to conduct this study so as to “undertake a thorough assessment of fisheries extension in Senegal, and contribute in facilitating the development of a strategic plan on extension with necessary human and institutional capacity. The TORs are included in to this report as Appendix 1.

Section 2. Reviewing Fisheries Extension in Senegal

2.1. Concept of Extension

The concept of Extension is defined in some dictionaries as “action to render knowledge accessible, to make it available to all.” This clear and precise definition helps us understand the concept. However, it is difficult to find a widely accepted synonym of the term extension. Some of the synonyms that have been proposed such as ***diffusion, generalization, propagation, popularization or vulgarization,*** are vague and rather general, whereas extension, as defined in Wikipedia, is a form of **educational dissemination of knowledge** to all. This definition, in our view, seems more appropriate, considering that diffusion involves an educational aspect, precise content (knowledge diffusion), and specific targets as expressed by “accessible to all” (meaning all those who are involved). In this regard, the term “knowledge” has a multidimensional connotation and can refer to academic, scientific or empirical knowledge, or knowledge on the techniques or technologies that should be acquired by a specific group of targets.

Based on these explanations on the definition, different expressions can be used to refer to extension, such as ***transfer of knowledge, ownership of concepts, transfer of innovation, capacity development***, ***transfer of technology,*** etc. For any approach utilized, there is always the idea of knowledge and learning disseminated to the targets concerned. We believe therefore that the concept of extension is indissociable from *training, continuing education, and capacity development,* all of which are concepts this study will address.

It is worth noting also that there is a new approach to extension which places more emphasis on the human person, on the actor rather than on material, techniques or technology. It is in this respect that many development agencies are talking more about “Advisory Support” or “Participatory Development”, which are terms highlighting interaction and partnership, as seen in fisheries co-management.

Finally, the New Information and Communication Technologies have ushered in a new form of extension that is developing via the Internet and Intranet networks, websites or email accounts that are used to share, transfer, and disseminate information and knowledge. Distance learning, or the provision of substantive information via the Internet, and the extensive use of mobile phones, are all examples of this trend.

2.2. General Characteristics of Fisheries Extenstion and its Relation with the Fisheries Sector

Extension, in the broadest sense, has been a concern for the Senegalese authorities since the country gained independence and decided to develop the primary sector by creating cooperatives and a department for Cooperation and Rural Expansion Centers (CER). The personnel in these centers were technicians in rural development. They included members of the department for Cooperation, responsible for reaching out and educating the rural masses. The technicians were in charge of organizing and supervising cooperatives and strengthening capacity of stakeholders, including crop and livestock farmers and fishermen. They were expected also to organize stakeholders, strengthen their capacity, and train them, so that they acquire the new techniques and technologies needed to develop Senegal’s agriculture sector.

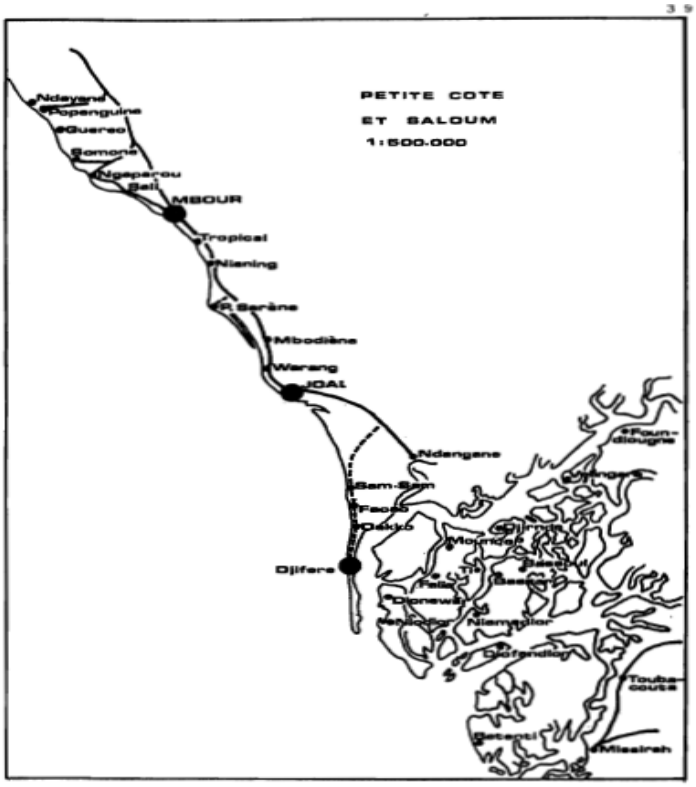
This was the context in which agencies and projects for agricultural development were established to provide a new impetus for growth. Some of the major agencies and projects were the Office National de Commercialisation Agricole et de Développement (National Agriculture Marketing and Development Agency) which has changed, the Société de Développement et de Vulgarisation Agricole (Agriculture Development and Extension Agency (SODEVA), and the Programme National de Vulgarisation Agricole (National Agriculture Extension Program) which is presently the Agence Nationale de Conseil Agricole et Rural (National Agency for Agricultural and Rural Councils (ANCAR). These different agencies were in charge of organizing, and overseeing the extension programs in the Agriculture sector.

In the fisheries sector, the authorities decided, in accordance with the government's socialist option taken at independence, to place emphasis on developing artisanal fisheries by organizing fishermen, supplying equipment and materials, and transferring technological innovations. Considering the growing difficulties in extension, there was a need to ensure proper ownership of new technologies and the appropriate use of the new equipment and materials provided to fishermen.

To address this important need at the time, the first initiatives of extension in the fisheries sector were centered on organizing local fishermen. It was only in the late 60's that the authorities began to undertake large-scale programs for the modernization of artisanal fisheries. These programs were based on providing new and more efficient equipment and materials (replacing sails with engines and providing fishing gear and other fishing, navigation and safety accessories), and introducing technological innovations (i.e. extension program on use of purse seine with FAO, experimentation and extension of CORDIERS (improved boats) with UNDP and FAO, and shore fishing). This is this context in which CAMP was established in 1972.

The extension initiatives in the artisanal fisheries sector had to deal with the particular features in the sector, such as (i) the poor organization of stakeholders, (ii) their large number (according to the last estimates – Prime Minister's General Policy Statement - 17% of Senegal's working population is involved in fishing), (iii) the dispersed landing points and fishing centers, and (iv) the number of indirect stakeholders (dealers, processors, transporters, carpenters, intermediaries, manufacturers or suppliers of packaging, materials and equipment, apprentices, trainers, etc.). Figure 2 below presents the situation on the Petite Côte regarding the dispersion of landing points.

Figure 2: Artisanal fishing landing points on the Petite Côte (Source: CRODT)



2.3. Fisheries Extension in Senegal

To understand extension in the fishing sector, we shall begin with an overview of extension trends from independence to the present. Secondly, we shall consider extension structures at three levels: (i) the first structures which played an important role in extension but no longer exist (CAMP and its predecessors: CAPAS, CAEP and CPEP, and PAPA SUD); (ii) State agencies (Ministry of Fisheries, DPM and other Technical Departments, Training Institutions, CRODT, ITA); (iii) non-State agencies that run collaborative management projects which have been closed, but still have activities on the ground (e.g. COGEPAS), local governance structures (CLPAs), NGOs (WWF and OCEANIUM) and Professional Organizations (FENAGIE PECHE). Lastly, we shall look at extension services and the relevance of training and extension programs.

2.3.1 Overview of Extension

From independence until 1980, the Senegalese authorities tried to encourage balanced development in the fisheries sector. They put emphasis on artisanal fisheries which had not been the center of interest until then. The priority in artisanal fisheries was to organize fishermen and give them equipment and means of production. Accordingly, the authorities set up (i) Coopératives Primaires d'Avitaillement or Primary Victualing Cooperatives (CPA) and CAMP to disseminate fishing equipment, materials and accessories. They tried also to (ii) increase the means of production available to artisanal fisheries (Projet d'Armement Expérimental or ARMEX). One reason for this was to give fishermen an improved vessel called le Cordier, similar to the traditional fishing boat.

Between 1980 and 2000**,** fisheries remained an important sector of the national economy, although Senegal was trapped in a period of economic adjustment. With the importance accorded to the

fisheries sector, the authorities set up a Ministerial department called the State Secretariat for Maritime Fisheries (SEPM) to boost development in this sector as well as activities for extension and capacity building. This resulted in new local development projects, such as: (i) the Projet de Développement de la Pêche Maritime dans la région de Ziguinchor / Ziguinchor Region Marine Fisheries Development Project (PAMEZ); (ii) the Centre de Pêche de Missirah / Missirah Fisheries Center (CPM) in the Saloum Delta; (iii) the Projet de Développement de la Pêche Artisanale de la Petite Côte / Petite Côte Artisanal Fisheries Development Project (PAPEC); and (iv) the transformation of CAMP into the Centre d'Assistance et d'Expérimentation et de Vulgarisation pour la Pêche / Center for Assistance, Experimentation and extension in the Fisheries Sector (CAEP).

One of the goals of PAMEZ was to develop professional organizations for fishermen, women fish processors, wholesalers and artisans **by training them and giving them appropriate technical assistance.**

The Missirah Fishing Center (CPM), on its part, was responsible for **training fishermen and encouraging them to use improved fishing boats** with useful fishing equipment and accessories.

> *PAPEC was established to create fishing centers in Joal and Mbour, and to provide funding for the supply of materials and equipment to fishermen and wholesalers. To take this forward, the dock and the fish processing center in Joal were built and run by a Management Committee. At the same time, funds were made available to relevant stakeholdres through a credit line at the Caisse Nationale de Crédit Agricole du Sénégal / National Agricultural Credit Fund (CNCAS).*

CAMP was changed to CAEP to provide equipment and improve the response to management, training and extension needs in the artisanal fisheries sector.

From 2000, there was a radical change in the fisheries policy, induced by the new realities in an increasingly fragile fisheries sector, especially the depletion of resources and the limitations of the top-down initiatives the authorities had been promoting on the ground. This forced the government of Senegal into a paradigm shift.

To face this new order, the fisheries sector began to center its policy on the notions of good governance, stakeholder involvement, and broad-based consultations for collaborative fisheries management. Innovative programs and projects were introduced. This also brought new needs for extension and capacity development that would be examined more closely through State and non-State agencies (Ministry, Technical Departments, CPEP, CRODT, ITA and training institutions), good governance organs (CLPA), projects (PAPA SUD, COGEPAS), NGOs (WWF and OCEANIUM), and Professional Organizations (FENAGIE PECHE).

2.3.2 Early Extension Structures

For the purpose of this study, we have chosen to study the case of CAMP and its predecessors (CAPAS, CAEP and CPEP) as well as the PAPA SUD.

2.3.2.1 The Boat Motorization Assistance Center (CAMP) and its predecessors

The Center of Assistance for the Motorization of Canoes (CAMP) was established as an outcome of cooperation between Canada and Senegal (1972 Convention between Canada and Senegal). The main objectives of CAMP were:

- To acquire new outboard engines and spare parts;
- To establish local outlets for the maintenance, repair and distribution of outboard engines;
- To train the technical staff required (mechanics, spare parts technicians);
- To establish a program for mechanical services.

The project functioned as an autonomous entity until 1978, during which time it played a decisive role in the modernization of artisanal fisheries. For example, a credit system making it possible for fishermen to acquire their material within a period of two years was adopted.

Organization and operation

CAMP established local outlets (engine repair and maintenance units) in the main fishing centers and provided all the fishing equipment and accessories.

A preventive mechanical services program was established to educate and train fishermen to use and maintain their engines. Meetings were held on a regular basis to supply fishing materials, equipment and accessories, sea fishing overalls, lifevests and engine parts to fishermen, and to teach them how to use and maintain such materials.

At the institutional level, CAMP was placed under the supervision of the Department of Oceanography and Marine Fisheries, and it had Representatives at the local level.

Results and accomplishments

On the whole, the results of CAMP were satisfactory, especially in the dissemination and ownership of technologies. The CAMP recipe for success was based on (i) good organization at the central and regional levels, (ii) the provision of the required resources and materials, and (iii) the organization of actors in cooperatives with the support of a team of facilitators and supervisors provided by the Department of Cooperation in the Ministry of Agriculture.

CAMP became part of the Center for Assistance to Artisanal Fishing in Senegal (CAPAS), another project of the Canadian Agency for Cooperation, whose objectives were to assist in organizing the sale and distribution of fish within the country and in the remote areas.

In terms of results, CAPAS (i) improved the organization, outreach and/or training of fishermen as well as their access to equipment such as outboard engines and fishing materials and accessories; (ii) established three (03) fish trading centers in Joal, Cayar and Rufisque with workers trained to properly handle, package, store and transport fish; and (iii) opened the fish distribution chain to the rest of the country and towards the remote areas in Senegal's eastern and river valley regions.

After CAMP achieved the objective of motorizing fishing boats and privatizing the sale of outboard engines and their spare parts, it was assigned new objectives and transformed into the Center for Assistance, Experimentation and extension in Fisheries (CAEP). CAEP became a full legal entity in

0ctober 1994 with a Ministerial Order from the Ministry of Fisheries, which set out its objectives as follows:

- To provide assistance, supervision, training and information to artisanal fisheries stakeholders engaged in all fields of activity (production, processing, marketing);
- To undertake, with fishermen in this sub-sector, the experimentation and dissemination of all the technical innovations related to the development of artisanal fisheries;
- To order and sell all the materials and equipment for artisanal fisheries.

With regard to institutional and operational issues, CAEP took over the responsibilities and even the personnel of CAMP, and offered them proper training to be able to redirect their duties accordingly.

In terms of results, CAEP functioned as a crosscutting entity and coordinated or conducted several training sessions for the Fisheries Department, and also for the Ministry of Youth. We shall examine the impact of these training sessions later in the study.

After the national consultations in 2000/2001, there was a shift in focus. The authorities transformed CAEP into the Fisheries Enhancement, Experimentation and Extension Center (CPEP). Established in September 2003 (Order of 31 December providing for the organization and operationalization of CPEP), this center, unlike the other Departments of the Ministry of Fisheries, was assigned crosscutting objectives, such as:

- The training and retraining of fishermen and aquaculturists;
- The experimentation and extension techniques and research findings on fisheries and aquaculture;
- The monitoring and examination of tax exemption records on fishing equipment.

On institutional, organizational and operational aspects, CPEP took advantage of the accomplishments of CAMP and CAEP.

In terms of results, considerable gains were made in the delivery of fishing equipment and accessories. In this regard, the proximity of fishermen, the existence of structures at the local level and of actors who were organized in EIGs all facilitated CPEP initiatives, particularly in stakeholder training and capacity building.

CAEP and CPEP made substantial contributions to the experimentation and extension of navigation and safety materials and equipment (Compasses, GPS, Life vests, flares and Reflectors). They also helped experimenting in collaboration with fishermen with fiberglass boats. These boats were found to be more comfortable and safe for fishermen. In spite of all these accomplishments, CPEP ended in 2006 after 3 years of operation. It ended due to lack of resources for staff suport and operations. According to the statutes which created these provisions for the establishement of a state department and extension services, the CPEP remains in existence. But it has been placed under the Ministry of Fisheries, and it has no staff and structure of its own.

2.3.2.2 Program of Assistance to Artisanal Fisheries in the South (PAPA SUD)

With funding from AFD, this project set out with the general objective to make a contribution to the sustainable development of fisheries in the areas concerned, by making optimal use of human resources. It covered fifteen (15) sites, including 12 supported by the European Union, namely:

1. Mbour (Dock), 2. Mballing, 3. Joal (Dock), 4. Khelkom, 5. KaddDiakhanor, 6. Dionevar, 7. Ndagane, 8. Ndakhougne, 9. Foundiougne, 10. Diameniadio, 11. Ziguinchor, 12. Kafountine, 13. Elinkine, 14. Cap Skiring, 15. Diembéring.

The project initiatives were directed to execute several plans of action identified by the users, in relation to: wharves, warehouses, toilets, public road networks, support to professional organizations, etc. The project was scheduled initially to last four (4) years, but was extended to finally last for five (5) years and a half.

Structure and action plans

A coordinator was appointed to head PAP SUD and measures taken to form a steering committee. The committee included representatives of Ministry of Finance, Ministry of Fisheries and the actors and communities concerned. The project contracted a number of firms providing services on legal and land issues, stakeholder organizing, engineering and planning, environment, oceanographic research, etc. The project was monitored locally, with the support of a firm hired by the donor, and evaluation reports were produced regularly.

Results and accomplishments

Each site established an inter-professional Economic Interest Group (IEIG) to look after the infrastructure provided and the equipment and materials given to the actors. The final evaluation report in 2006 states that key infrastructure for extension programs and capacity building was delivered as planned, with great efforts to organize and train the stakeholders concerned in order to improve their working conditions and teach them to use appropriate materials and equipment.

Apart from a few exceptions, the IEIGs run well and provide satisfactory servicing of the infrastructure and equipment they have. The program achieved these results because it was well structured, hired skilled experts to sensitize and train actors, monitored and evaluated progress thoroughly and on a regular basis, and had a year-long consolidation phase after its activities ended. The sites for PAPA SUD are shown in Figure 3 below.

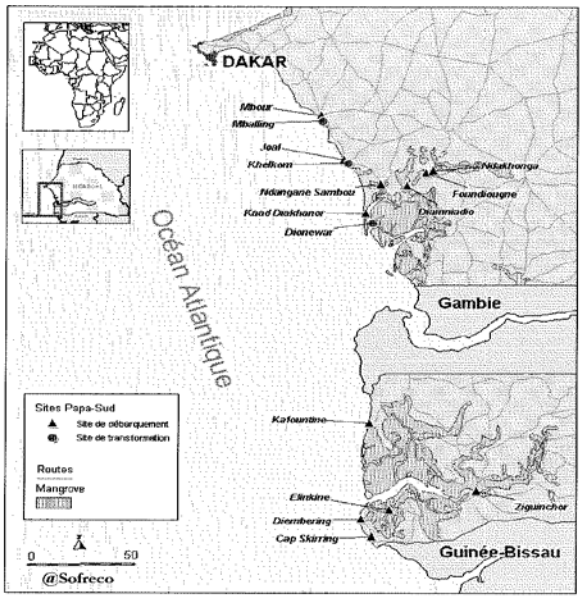


Figure 3: Map of the 15 PAPA SUD sites on the Petite Côte (4), in Sine-Saloum (6), and in Casamance (5)

2.3.3 Current Situation of Fisheries extension

2.3.3.1 State Agencies

A. Ministry of Fisheries and Maritime Affairs (MPAM)

At the institutional level, the Ministry of Fisheries and Maritime Affairs (MPAM) and its Technical Departments concerned - DPM, DPC, DPSP, DITP – are governed by the public administration system, headed by the President of the Republic, then the Prime Minister, Ministers and Technical Departments and Services. The institutional architecture is based on various provisions, such as:

- The statutes (Decrees) issued by the Presidency to appoint the Prime Minister, appoint Ministers and form the Government, institute the various services of the State, the public service oversight bodies, national corporations and public limited liability companies held between the Presidency, the Prime Minister's office and the Ministries. A Decree from the Presidency also sets out the responsibilities of the various Ministries, including those of the Ministry of Fisheries.
- An Order from the Ministry of Fisheries making provision for the Organization and Operation of each Technical Department.

These regulatory provisions are more concerned with setting out frameworks. They provide no details and are not exhaustive.

Hence, the decrees that provide for the institution of the various services of the State simply lay out, for each Ministry, a list of structures, departments and administrative services.

- The Decrees, which lay out the responsibilities of Ministries, are concise and only give a summary description of the main functions and missions.

With regard to the Ministry of Fisheries, the activities pertaining to training, extension and capacity building are stated in a rather generic manner as follows: (i) the Ministry of Fisheries and Maritime Affairs "shall oversee that fishermen have the proper qualifications" and "promotes the modernization of artisanal fisheries" (Decree 2012-645 of July 2012, the last Decree 2013-1287 of 2 September 2013 talks only about support to artisanal fisheries); (ii) The Maritime Training School / l'Ecole de Formation Maritime (EFM), the National Training Center for Fisheries and Aquaculture Technicians / le Centre National de Formation des Techniciens des Pêches et de l'Aquaculture (CNFTPA), the Fisheries Enhancement, Experimentation and extension Center / le Centre de Perfectionnement, d'Expérimentation et de Vulgarisation de la Pêche (CPEP) are under the Ministry of Fisheries; (iii) the Department for General Administration and Equipment includes a Human Resource Unit.

In relation to training and human capacity building, MPAM supervises the Technical Departments and schools under its control. The Human Resource Officer plans and implements the Ministry's staff capacity development program each year using funds from the investment budget. The program includes seminars for staff development and supports the training facilities (ENFM, CNFTPA, IUPA) that train staff from the Ministry. Based on the needs identified in each unit, the human resource officer selects experts and specialized firms to provide training services.

B. Technical Departments

The case study in this section focuses on DPM, to assess its institutional set-up and ways of working, and also includes a more general review of the other departments.

B.1 Department of Oceanography and Maritime Fisheries (DPM)

In accordance with the ToR, we set out to examine the institutional set-up, structure, the ways of working and results of DPM from the angle of extension and from the angle of resource management.

Extension and capacity building activities:

Institutional set-up

The DPM is mandated to: (i) train artisanal marine fishermen, and (ii) coordinate the demonstration and ownership of equipment, techniques and research findings on maritime fishing.

DPM has an Artisanal Fishing Unit, (i) supporting the extension and promotion of value-added products from artisanal fisheries, (ii) monitoring research findings on the development of value-added products from artisanal fisheries, an office for Experimentation and Extension, and a human resource unit for all its services.

Structure and operation

There is no particular organization or system for extension under the artisanal fisheries unit, which focuses more on monitoring the extension activities in other projects and conducts a relatively small number of extension activities. The unit lacks human and operating resources, apart from a Fisheries Officer who is a trained anthropologist, but is required to supervise regional services not necessarily under its control.

In the Department of Marine Fisheries, there is a new level of commitment to strengthen the extension unit with the resources and materials it needs to fulfill its duties properly.

The human resource unit engages also in project support and information sharing on project and program accomplishments. It has organized training and capacity development, together with FENAGIE PECHE, for all processors to boost extension programs aimed at improving the processing techniques developed with the Japanese International Cooperation Agency, JICA. But the slow pace of progress on the ground is holding back efforts to implement and monitor the actions of the human resource unit.

Fisheries development and management :

We have chosen the terms Fisheries Development and Management that are used at the international level, especially by FAO.

Institutional set-up

The Code of 1998, Act No. 98-32 of 30 April 98, and its implementation Order introduced significant innovations in fisheries development and management, particularly in terms of (i) Consultation and Good Governance (creation of the National Advisory Council for Marine Fisheries, CNCPM, Local Artisanal Fisheries Councils, CLPA); and (ii) sustainable management (development and implementation of management plans and institution of the artisanal fishing license).

In accordance with the provisions of the Fishing Code and its implementing provisions, **CLPAs can "propose protective measures for the development and management of artisanal fisheries, the resources exploited and their habitats".**

A resource development unit has been set up in the Department for Marine Fisheries. Its duties are basically to (i) implement measures for sustainable fisheries development and management, (ii) monitor compliance with international rules and regulations for fisheries development and management, (iii) collect and process statistics, and (iv) monitor national and international institutions working in the fisheries sector.

Structure and operations:

Since these institutions were put in place, concrete measures to provide the resources they need to function properly have been lacking. For example, the CLPAs, as we shall see later, are in need of resources and still face operational challenges.

Two important projects for fisheries development and management are going on at present. These are the Sustainable Fisheries Management project / projets Aménagement Durable des Pêcheries du Sénégal (ADUPES), and the National Boat Registration Program / Programme National d'Immatriculation des pirogues (PNI).

ADUPES has contracted CRODT to assess demersal stocks during the cold season and the warm season, and to carry out selectivity experiments in deep-water shrimp fisheries. Efforts to regulate access are going on as well, with activities to design and implement Deep-water Shrimp and Octopus Management Plans. Similarly, the public authorities are planning to support DPM, DPSP, CEP, CLPAs and the Senegalese Shipowners and Fishing Investors Association / le Groupement des Armateurs et Industriels de la Pêche du Sénégal (GAIPES).

The PNI has registered a good number of the boats in Senegal, yet lacks the financial resources to make further progress. A significant amount of information on the fleet is now available, but other mechanisms are required for fishery resource development and management to be successful.

With regard to extension and Capacity Development**, the DPM has developed a long experience acquired throughout numerous initiatives** since the CAMP era, and the different experiences they have had in the extension of innovative equipment and materials, technologies or techniques (Outboard engines, Navigation and safety equipment, more efficient fishing boats and accessories, etc.). **DPM's weaknesses remain at the institutional level** (structures are created but there is no funding to make them operational).

B.2 Department of Inland Fisheries (Direction de la Pêche continentale (DPC)

The main responsibilities of the DPC are: (i) to design and implement development projects and programs; (ii) to improve the skills and capacities of inland fishermen; (iii) to ensure the experimentation with and extension of equipment, techniques and research findings on inland fisheries; and (iv) to promote value-added products and facilitate their distribution. The department has a Resource Regeneration and Development Unit. Although established in 2000, the Department of Inland Fisheries is still going through a development and growth process, due to several staff changes resulting in too many program modifications.

After training EIGs and CLPAs, the DPC delivered training to the fishermen who fish waters across the country. The training exercise for these fishermen covered aspects such as fishing techniques, fishing gear and regulations. As for women fish processors, their training was on fish processing techniques, hygiene and quality. Material was procured, especially from OMVS and the State. This made it possible to distribute fishing nets, life vests, canoes, bicycles for the transportation of goods, etc. To implement its programs, the DPC outsources activities to the Regional Services for Fisheries and Surveillance and conducts field visits for outreach and monitoring.

B.3 Department of fish processing industries (Direction des Industries de traitement de la Pêche (DITP)

The DITP is supposed: (i) to provide advisory support for the development of fishery and aquaculture products, and (ii) to contribute in developing and satisfying national demand for fishery and aquaculture products. These concerns illustrate the enormous demand for communication and outreach among the stakeholders involved, in particular those in the fish processing and supply chain.

This has to do with the Product Promotion and Development Unit, which has been working together with ITA to develop new products (marinades, sausages, ground sardinella), and has signed an agreement with ITA, thanks to the support it has been receiving from PRAO. However, the DITP's expectations from this agreement remain unfinished. The PRAO is also funding an ongoing study on Senegal's health control system and the establishment of a digital monitoring unit that will contribute to the creation of a databank with technical and commercial data on fisheries products.

As in the DPM and the DPC, there is a lack of adequate material and human resources in DITP. Most extension and capacity development initiatives fall under project and program support activities. This was the case in the program conducted together with the European Union, which enabled DITP to mobilize and support Industrial Fishermen during efforts to standardize factories and sea vessels. Another example is the ongoing EU/ACP program aimed at improving food safety. A do-it-yourself guide for control in the fisheries sector has been prepared and will soon be at the extension stage. The DITP has also trained women fish processors from Cayar to improve the quality of the products processed traditionally. The DITP is currently mentoring a woman entrepreneur who wants to set up a modern manufacturing plant with improved quality products that meet export market requirements.

B.4 Department of Fisheries Protection and Surveillance (Direction de la Protection et de la Surveillance des Pêches (DPSP)

At the DPSP, there is an Artisanal Fisheries Safety Unit which has sub-sections, including the outreach Section. The unit's duties are: (i) to ensure safety at sea for the artisanal fleet; and (ii) to improve safety in artisanal fishing boats and for artisanal fishermen. The Artisanal Fisheries Safety Unit, one of the three units of the DPSP, receives support from Regional Services and from about a dozen Coastal Stations.

The DPSP has speedboats anchored respectively in Cayar, Saint Louis and Ziguinchor. Each year DPSP conducts a campaign, during the rainy season, to inform and sensitize fishermen and other actors to the weather conditions and the challenges for safety and rescue at sea (see Annex 1: Proceedings and Results of the fishers outreach campaign). The Heads of Coastal Services and Stations as well as other stakeholders have been trained, with the support of the National Marine Training School, to administer the training and sensitization modules according to plan. The sellers and suppliers of fishing and safety materials and accessories support the DPSP and take part in the outreach campaigns targeting fishermen.

Similarly, during campaigns and other field missions, life vests are purchased and resold to fishermen at give-away prices. The DPSP uses these occasions to conduct sensitization and extension on the importance of using a range of different equipment (orange smoke distress flares, GPS, first-aid kits) as well as on rescue and safety techniques. DPSP's role in disseminating information and promoting the use of different equipment - GPS, flares and radar reflectors-in fishing activities, has been significant. However, DPSP still faces challenges to ensure that all fishermen use life vests and comply with safety instructions during bad weather conditions. The report on the last outreach campaign is attached in appendix 2.

C. Training Schools

C.1 National Technical Training Center for Fisheries and Aquaculture (Centre National de Formation des Techniciens de la Pêche et de l'Aquaculture (CNFTPA)

The CNFTPA is governed by statute 2009-239, which provides for the addition of continuing training and custom-made training to the center's duties. The continuing education and custom-made training courses are administered by a new department, called the Department of Training and Continuing Education. It was established after the disbandment of the former Department of Studies.

In terms of its structure, the Center is well organized and has different structures which provide initial training and continuing education (Department of Studies, Department of Training and Continuing Education, Professional Development Council, Teachers' Council, Disciplinary Council, Program Committee). Furthermore, the private sector is now a member of the Professional Development Council, and this makes it easier for the council to address the sector's needs for training or capacity development.

Operations: The center follows the republican calendar which governs national schools, and provides theoretical and practical curriculum adapted to the fisheries sector.

Human and material resources

The center has the teaching and administrative staff required, but most of the teachers are working on a part-time basis. It also has two laboratories, including a new microbiology laboratory still without equipment, three (03) fish breeding ponds, two (02) improved stoves and other teaching/learning materials and equipment required, but these are too old and need to be improved and renewed. The operating budget comes mostly from the State revenues and is not enough. The center has good collaborative ties with the Technical Departments of the Ministry of Fisheries and other entities, including CRODT, ITA and the private sector.

Results and accomplishments

Hundreds of junior and senior Fisheries Technicians from Senegal and abroad have been trained by the center. In the current school year, ninety (90) students, including ten (10) from abroad, are undergoing training. According to the director, thirty percent (30%) to forty percent (40%) of the center's population are individual candidates (students admitted without passing an entrance exam and who pay for their training from their own pockets).

In the past, the center worked together with the National Center for Professional Training and the National Youth Fund to conduct outreach and capacity development initiatives for stakeholders in the fisheries sector: fishermen, dealers, fish processors. These training sessions, administered with the center's teaching staff and collaborators, covered "safety at sea, hygiene and quality issues, literacy, accounting, small business management, the problems of fishery product spoilage and conservation, etc." The center also conducted applied research and designed an improved fish-smoking oven. It is now awaiting approval to begin work on the extension phase. In the same direction, the center opened fish-breeding ponds, and produced and tested its own brand of fishmeal. The center is planning activities for the extension of the newly developed fishmeal.

The major challenges facing the center are: (i) the lack of adequate funding to cover its operational costs; (ii) the almost total reliance on part-time teachers, with only one full-time teacher on duty; and (iii) the fact that the teaching is not well suited to the realities on the ground and the changes taking place in the sector.

To overcome these challenges, the main recommendations are to: (i) provide adequate human resources and renew teaching/learning tools and equipment, (ii) let the private sector play a more active role in education, (iii) give trainees more time on the field to ensure that training is more adapted to the needs on the ground, (iv) help the center to have its own teachers, and (iv) see to it that projects as well as research and administrative services rely more often on the school for capacity development programs, the development of applied research and extension.

Considering that IUPA is in charge of higher education, it may be useful to see whether the center needs to be more involved in its initial mission of training technicians and developing training for fishermen. This training for fishermen, in particular those in the fisheries sector, is even more necessary today as there is no training center for these fishermen and no outreach programs.

C.2 National Marine Training School (Ecole Nationale de Formation Maritime (ENFM)

The ENFM, like the CNFTPA, was transformed with the passing of Statute 2009-240. The transformation confirmed the ENFM's initial mission of training (initial training and continuing education) cabin crew (Captains and crew members) needed by fishing and commercial fleets. The concern here was to ensure that this training was in accordance with the standards of the International Maritime Organization (IMO), particularly in terms of training content and patenting, taking into account the provisions of the 2002 Code of Conduct of the Merchant Navy.

Structure and operation

The ENFM has the required structure (Administrative Department, Research Department, Executive Committee, Management Committee, Department of Internships, etc.) and the necessary material and

equipment. It works closely together with the Department of Fisheries, the Fire Department and the Private Sector to develop its capacity and discharge its duties properly.

Without diverting from its core mission that entails the initial training and continuing education of crew members, the ENFM contributes, within its areas of competence, to the delivery of capacity building programs for State employees, members of professional organizations and the private sector. It administers training modules that are also available to fishing companies and fishermen on (i) safety, (ii) fire prevention, (iii) managing crisis situations and human behavior, (iv) Basic First Aid, (v) survival techniques, and (vi) fisheries regulations.

Results and accomplishments

The CNFM, like the CNFTPA, ensures that workers are available to meet the needs of national fleets. It participates also in targeted custom-made training and capacity development initiatives for State employees and for fishing projects and fishermen.

Challenges and way forward

Like the CNFTPZ, the CNFM's major challenge is the lack of adequate budgetary resources from the State, even though fees are paid to the school. The CNFM, like CNFTPA, should develop both custom-made and continuing education, as well as research development programs. Support should be provided for this, considering the benefits for ongoing projects and programs in the sector, and especially how it would complement CRODT and ITA initiatives.

C.3 University Institute for Fisheries and Aquaculture (Institut Universitaire de Pêche et d'Aquaculture (IUPA)

The last university training institution in the fisheries sector, IUPA, was created in response to the closure of the ECWA's Higher Institute of Fishery Science and Technology (ISSTH), which trained senior fisheries technicians and engineers (in the Maritime or Inland sectors) for Member States of the former ECWA. The IUPA, like any institution of Higher Learning, also has a "Research and Development" unit and collaborates with Technical Departments, fisheries-oriented institutions and some fisheries projects.

D. Research Institutes

D.1 Research Center of Oceanography of Dakar Thiaroye (Centre de Recherches Océanographiques de Dakar Thiaroye (CRODT)

The CRODT is a research institute dependent on the Senegalese Institute of Agricultural Research, which is under the Ministry of Agriculture. It has close ties with the Ministry of Fisheries, the first recipient of its results and one of its donor institutions. From a scientific standpoint, CRODT has two main programs, Resource and Environmental Management on the one hand, and Population Dynamics on the other hand. These programs get support from the public administration, the statistics office, the Development Unit and the Documentation Department.

Organization and missions

From the activities performed, the departments at CRODT are as follows: Biology and Ecology of Species, Fishing Gear Technology, Socio-economics, and Aquaculture. The missions assigned to CRODT include: (i) Assessment of Fisheries Resources, (ii) monitoring of resources and harvesting systems, and (iii) provision of the technical basis for fisheries management.

Extension activities

Although CRODT claims that it is not an extension structure by vocation, it has constantly supported the administrators and fishermen in fisheries research and management. From 1969, CRODT began to: (i) participate in the experimentation and extension of the purse seine. It also supported projects, especially with the (ii) trials performed on how to capture cuttlefish with pots and jigging, (iii) the construction and testing of insulated boxes for ice fishing, and (iv) the improvement of the traditional canoe.

CRODT engaged also in supporting co-management projects by (v) creating and running programs for participatory research with the stakeholders involved. This initiative by CRODT is deemed positive and instructive overall, but some stakeholders have been critical of the approach taken and the methods used. In their view, more efforts have to be made to improve the outreach and dissemination of the results obtained.

The activities for participatory research, conducted with co-management programs, were concerned with establishing spawning seasonal closures for cymbium and octopus, selective hooks for capturing thiof (COGEPAS), and the sardinella value chain (COMFISH). The CRODT began to collaborate with the CLPAs based in areas where fisheries are harvested in collaborative management programs. It also assessed the impact of local co-management initiatives, and then initiated cooperation with other entities, such as IUPA, the Ecole Supérieure Polytechnique and ITA to build synergy among them.

Development and eEvaluation of research programs

The CRODT has a five-year Strategic Program that it develops together with partners like DPM, NGOs and donors to ensure their needs are covered. It is with such partners that research programs for the administration of fisheries are developed. There are other stakeholders that form an important part of such initiatives, notwithstanding the limited resources set aside for research needs. To take stock of the progress made each year, CRODT prepares an annual report.

Program validation and dissemination system

The CRODT, like other research institutes, uses conventional ways to disseminate its studies and research findings. These include: (i) the production of scientific documents, (ii) archiving, (iii) Internal documents, and (iv) the publication of articles in the ISRA newsletter. It also publishes joint projects and participatory research reports. The dissemination and extension of research findings is done by a specific body in the Senegalese Institute for Agronomical Research (ISRA). The service is called the information and promotion unit (UNIVAL).

Major challenges

The main challenges have long been the lack of human and material resources. There has been a new increase in salaries to trigger new momentum in efforts to retain and empower the workers at CRODT. The institute’s long experience and accomplishments in the field of research are assets that must be sustained, particularly by injecting the financial and material resources it needs to have.

D.2 Institute of Food Technology (Institut de Technologie Alimentaire (ITA)

Institutional Framework, Structure and Operation

The ITA is under the responsibility of the Minister of Industry. At the same time, it is supervised by a Board of Directors. A Managing Director runs the executive branch. Below the executive branch are the subordinate departments which make up the institution. For the fisheries sector, ITA has a Fish Laboratory placed under the authority of the Technological Development Unit. This unit reports to the Technical Department. The fish laboratory replaces the former Fish Section and is placed under the responsibility of a laboratory Manager who works with two (2) Researchers and one (01) Technician. The staff is well trained and has technical equipment. This includes a fish smoking house, two choppers, one fish scaler, tubs, one cooker, one cutting board, etc. The ITA has no local branch offices. Hence, the staff team mentioned above performs the routine tasks (limited by low budget) and supports programs and projects. It is difficult to plan activities on a yearly basis. Practically everything depends on projects and programs, which bring in the bulk of the resources and define their needs. The ITA needs to have more material and human resources.

Accomplishments in extension, training and capacity development

Extension: the ITA has been carrying out research on equipment and materials, on ways of improving working conditions, and on the creation of new products. On equipment, ITA took part in the testing and the extension of the first "modern" ovens, such as the chorkor oven, the Parpaing oven and other improved ovens Altona, fish containers, and solar tents. For two years, it conducted experiments on two improved oven prototypes, a gas dryer and a processed fish storage facility in Yene (project funded by the National Agricultural Research Fund, NAAF). ITA trained fish-processing EIGs in Yene to use such equipment, but because of the lack of raw material, the EIGs failed to use the equipment to full capacity. To help decentralize cooperation, the fish processors in Nianing received a dual system fish dryer (solar and electric), and ITA teaches them to use such equipment.

The ITA experiments on equipment, and then designs technical specifications and sends them to a local company (ENERGECO), which produces the ovens, dryers and other equipment on behalf of the Institute.

The ITA also conducts research on new products. For example, it has developed a fish processor (sausage, terrine) and trained the women fish processors and the EIGs at the Central Fish Market in Yene in the techniques of making new products. A woman entrepreneur and Seafoods shopowner has agreed to market these products. On shellfish in particular, the ITA has devised ways to prepare pickles from shellfish and tested methods for producing dried shrimp. The ITA places emphasis on making new produIts that add value to the low-value species.

Training and capacity development

The ITA has developed well-illustrated teaching/learning materials in Wolof language, and uses the materials to teach economic interest groups which are composed of women fish processors. These materials include modules on different topics, such as: (i) good hygiene practices in fish production, (ii) fish drying, (iii) improved artisanal processing, (iv) packaging, (v) drying and storage, and (vi) how to improve fish processing sites. With financial support from IDRC, the ITA pursued vigorous efforts between 2001 and 2002 to deliver training on improved processing techniques to the fish processors in Mbour, FassBoye, Potou and Lompoul. Together with IUPA and Ecole Polytechnique, the institute is currently running an extensive training program on shellfish processing and storage

techniques in the Saloum Islands. The ITA has also been delivering training on how to produce fish processors for women in Thiaroye who suffer from problems of illegal immigration. These techniques are now well understood and efforts are under way to raise funds for their extension and commercialization.

Strengths and weaknesses

The ITA has acquired a wealth of experience in extension and capacity development. It has forged collaborative ties especially with DPM, project initiatives, IUPA, FENAGIE PECHE, and CRODT.

However, it has difficulty in obtaining adequate human and material resources as well as funding for these activities. This hinders the extension of results from its research work and the lessons learned from its experience. It is only through project support that such extension is done. Without resources, it is difficult to monitor, sustain and build on such projects.

This is why ITA relies a lot on the Department of External Relations to communicate the work of the institute and disseminate the results of its research and the lessons learned from its experience.

To conclude this section on State entities, it may be useful to discuss the National Agency for Maritime Activities (ANAM) and the High-level Coordinating Agency for Maritime Security, Maritime safety and Protection of the Marine Environment (HASSAM).

ANAM is responsible in particular for Merchant Marine regulations, and takes charge also of the security of open vessels such as traditional canoes. It has initiated Orders on canoe security and standards, and is planning in the next activity phase to carry out extension on these provisions during tours that will be conducted for the education of fishermen. ANAM also manages side ports. It is in this context that fishery storage facilities have been established for artisanal fishery stakeholders, and particularly in Ziguinchor and Foundiougne.

The HASSAM was established in 2009 to coordinate the activities of all state entities working on the marine environment and dealing in particular with pollution, safety and security issues. It played a key coordinating role when whales were stranded on the beaches some years ago, and later conducted a mapping of the vulnerable coastal areas. The HASSAM works closely together with other state entities that are interested in the harvesting of marine resources and the marine environment (DPM, CRODT, Department for Environment, Programs and Projects, Marine Protected Areas, Forestry, etc.).

2.3.3.2 Non-Governmnetal Organizations

Co-Management Projects (COGEPAS)

This is the "Technical Cooperation for Strengthening Organizational Capacities and Training Leaders of Artisanal Fisheries Practitioners Project", known commonly as the Collaborative Management in Artisanal Fisheries in Senegal (COGEPAS) project. It is the first formal initiative on collaborative management to be conducted in Senegal.

It is an extension of the resource management and evaluation program carried out by JICA through OAFIC (Overseas Agro-Fisheries Consultants Co). OAFIC’s first initiative was in Nianing. After discussions and debates with the local administrative officials and actors, a decision was made to undertake a collaborative management program centered on cymbium and octopus, considered to be priority species because of their impact on social and economic life.

The collaborative management initiative consists in administering biological rest periods for octopus and cymbium, and taking supportive measures to build a "fishing pier" with a view to enhance the use of produce, open a poultry, provide a shell-grinding machine, and support the marketing phase.

Nianing project

The Nianing project was Senegal's first collaborative management experience. So we deemed it useful to highlight the major features during the project's implementation phase before reviewing the other COGEPAS experiences, the approach used for Extension and Capacity Development, the results obtained and the lessons learned. The first distinctive feature of the Nianing project was the application of biological rest periods for a given period, during which fishing was strictly forbidden, in order to ensure good management of the resource. Before then, spawining seasonal closures were implemented only for practical reasons when fishermen turned back to farming. To determine the best spawning season, octopus pots for spawning were immersed (120 initially) in the year of trial and checks conducted every fifteen (15) days to monitor spawning. The spawning seasonal closure, chosen together with the stakeholders, DPM and CRODT were the month of September for octopus, and the month of December for cymbium, considering the spawning periods of these species.

A management committee was set up with a 7-member executive committee. This committee monitored the program, together with the site officer who was present in all meetings. The co-management initiatives with JICA were scheduled to last two years (2004- 2006).

Results and accomplishments

(i) the spawning seasonal closure was followed properly in the initial phase, (ii) the project's major challenges were in the management of the poultry and the production of shellfish powder, (iii) relations with industries were facilitated and loans obtained, making it possible to improve the conditions for commercializing octopus and cymbium, (iv) collaborative management initiatives continued at the end of the program, but when it came to implementing the spawning seasonal closure for cymbium, there were problems because the period (December) coincided with fishermen's huge needs for the end-of-year season, especially with the holidays, (v) there were gains in recruitment, confirmed with the monitoring of pots for spawning, (vi) several meetings, outreach intiatives and training sessions were organized to help develop the capacities of stakeholders and strengthen their partnership, and (vii) the homogeneous nature of the population, with few seasonal workers, the existence of age groups and the presence of the fisheries officer, made it easier to monitor the project and manage conflicts.

Other COGEPAS initiatives

The stakeholders and fishing communities in Pointe Sarène, that were associated with the preparation and implementation of the Nianing project, expressed their need to conduct the co-management initiatives. These began in 2005 with (i) the application of spawning seasonal closure for octopus and cymbium, and the sinking of pots for spawning. The first initiative was rolled out with JICA, and followed with other stakeholders' lead initiatives such as: (ii) population enhancement programs, (iii) a 30% reduction of gillnet mesh size, (iv) compliance with netting regulations, (v) the extraction of young cymbium from mature females and returning them to the water, and (vi) the setting of artificial reefs using pots to enhance octopus spawning. A gas station was opened under the Income generating component.

As we saw in the Nianing initiative, the community organization by age groups was a favorable factor for the implementation of joint activities. With the coming of a new project by the GDRH in 2010, a CLP was established at the onset of activities to replace the Management Committee.

Project ownership was satisfactory. The stakeholders attest that the presence of a wide age group enhanced partnership. They say also that, the spawning seasonal closure contributed to increase the spawning period of octopus, and with the outreach and training provided, including the efforts by WWF and EndaRepao, women have improved their conditions of work and their service delivery. These major gains and the ones made in Nianing provided the momentum to begin efforts for the extension and regionalization of management initiatives to all the CLPAs in Mbour division, and to continue the collaborative management experience with other initiatives. On the whole, the different initiatives undertaken by COGEPAS can be summarized as indicated below. The table covers the nature and type of co-management initiatives on both single species and multi-species management or an ecosystem-based initiative:

Table 1: Summary of COGEPAS collaborative management initiatives. Source COGEPAS

Main initiatives	Single species	Several species	Ecosystem-based
Fishing effort Reduction	Octopus in Mbour Division: Seasonal closure; Thiof in Joal: Reduction of the number of hooks	Demersal fish in Lompoul and DJifère: Reduction of the number of gill nets in activity	
Protection of spawners	Octopus in Mbour division: seasonal closure		
Spawning enhancement	Octopus in Mbour division: setting octopus pots; Cuttlefish in Djifere: Extension program on use of artificial reefs.		
Protection of juvenile or immature fish	Thiof in Joal: Use of selective hooks to reduce juvenile catches. Cymbium in Joal and the neighboring villages: the release of baby Cymbium	Demersal fish in Djifere and Lompoul: Increase the mesh size of active gill nets	All the species in Joal: artificial reefs made of shells and AMP

To conduct its initiatives effectively, the COGEPAS project was structured properly and put under good conditions for implementation, as a result of stakeholder organization and sensitization, the adoption of new measures and the transfer of technological innovations.

Structure and operation

COGEPAS, like all DPM-based projects, made use of DPM's human resources and logistical support, in particular the buildings, means of communication, access to stakeholders and availability of local services. To ensure this, a Senegalo-Japanese team was set up under the coordination of a Japanese project manager and his Senegalese counterpart. The team had the required experts, including experts in collaborative management, fisheries management, and stakeholder supervision.

Implementation and operation

The approach used was based on an adaptive approach. It began with a trial project in Nianing and extended progressively to Pointe Sarène and then to Mbour division. There was a particular emphasis on the preparatory phase. Several meetings and working sessions were held with the actors of the CLPAs concerned. There was engagement in research and the selection of some attendant measures.

Before each initiative was implemented, efforts were made to establish a monitoring committee and a counterpart, who was the fisheries officer of the monitoring station concerned.

The outreach work intensified and the stakeholders on the ground participated in all operations, especially when it came to choosing initiatives based on the realities on the ground, participatory research and the study, adoption and extension of technological innovations. All the required materials and tools for teaching/learning were used (posters, film production and screening, inter-active sessions, newsletters, workshops and seminars, practical sessions and manual work, etc.). This made it possible for stakeholders to learn how to make and use octopus pots, to build artificial branches for cuttlefish, to make artificial reefs, etc. Below are some of the photos on these inititives.

Figure 4: Actors making and transporting shellfish reefs, and making artificial branche. (Source: COGEPAS)

B. Local Marine Fisheries Committees (CLPA)

National governance has evolved with decentralization and the creation of local government areas whose missions and responsibilities are expanding progressively. Decentralization is a means for the State to delegate some of its powers to the local authorities, and has resulted in the establishment of nine (9) areas governed by local governments.

Fisheries were not among these responsibilities. We may conclude, however, that the decision to devolve authority, on one hand, and the need to enhance local fisheries management, on the other, led the authorities to amend the 1998 Fishing Code and establish local structures for good governance. These structures include the Local Artisanal Fisheries Committees (CLPA). At national level, these CLPAs are under the supervision of the National Consultative Committee for Marine Fisheries (CNCPM). The creation of CNCPM and CLPAs marked a shift in the sector's management approach, brought by a change in emphasis to new concepts like Fisheries Management, consultations between all stakeholders, equitable management or co-management of fisheries resources by the public authorities and the private sector, following a system of shared responsibilities.

It is in this respect that the 1998 Fishing Code (Laws, Decrees and regulations, including the regulation 09388 of 5 November 2008, issued by the Minisry of Fisheries) provided for the creation, organization, operationalization and responsibilities of CLPAs.

The main responsibilities of CLPAs are to:

- Advise the Minister of Fisheries on issues the Ministry submits to them;
- Organize fishermen to prevent, reduce and resolve conflicts at the local level;
- Engage in surveillance activities;
- Propose protective measures for resource and habitat management;
- Provide information to fishermen;
- Give advice on infrastructure management;
- Help manage socio-economic impacts of management and conservation measures;
- Review requests for artisanal fishing licences.

The Order from the Minister of Fisheries provides that CLPAs can take management measures within their local jurisdiction and implement them upon approval by said Minister.

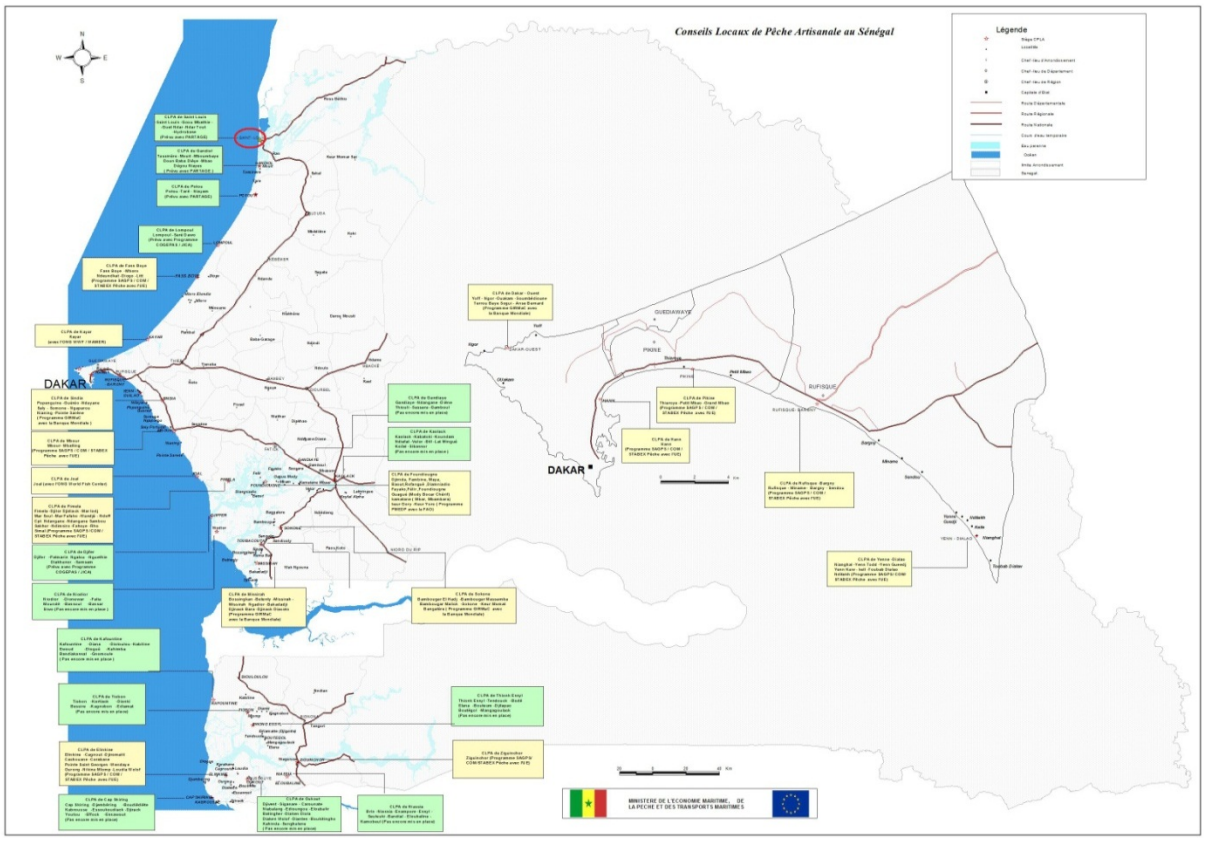
In accordance with these two provisions, 32 sites were chosen to host CLPAs taking into account the administrative divisions (community approach) and the volume of fisheries activities in these local communities (business approach).

The Order from the Fisheries Minister stipulates as follows: "Depending on whether the CLPA is structured using the business or local community approach, the representatives shall come directly from associations (business-oriented CLPA) or from local villages and/or commune-based committees (community oriented CLPA).

The colleges are made up of colleges of fisheries stakeholders, based on the work they do (fishermen, fishmongers, processors and related professions), and of other colleges (council of elders and dignitaries, council of local elected officials, council of administrators).

Four pilot CLPAs (Sindia, Cayar, Joal, Foundiougne) were chosen to be the testing grounds of the Fisheries Administration. From 2006 they received support under the European Union's STABEX program. The figure below shows the location of the CLPA sites.

Figure 5 below shows the number and location of CLPAs. (Source: DPM)



Presently, 24 CLPAs are established formally and recognized by an Order from the Minister of Fisheries. These CLPAs include representatives of all stakeholders and local communities. They are the “official tools for local governance”. In terms of structure:

CLPAs include: (i) colleges (college of elders and dignitaries, college of local elected officials, college of local administrators, college of marine fisheries stakeholders with fishermen, wholesalers, fish processors and those in related professions living in the local community concerned or exercising a fishing activity in the community on a permanent basis); (ii) the advisory council with advisors including stakeholder representatives as de facto members. The council can have up to 40 members, with at least two-thirds from fisheries. The other CLPA organs are: (iii) local committees (to diagnose the artisanal fisheries sector, participate in running the CLPA and oversee members’ compliance with the decisions made); (iv) the coordination and advisory body (in charge of information management, sustainable management of fisheries resources, equity, transparency and capacity development for its members, infrastructure management and involvement in all the sector’s development projects and programs in its local community).

Functionality

From the findings of the Artisanal Fisheries Division, only 10 of the existing 24 CLPAs are functional. These are the CLPAs involved in collaborative management projects such as COGEPAS, or the former GDRH. Many CLPAs lack resources, have no programs of action and do not hold meetings. Many stakeholders do not know the missions of the CLPA. In this context, only CLPAs doing collaborative managemet projects carry out extension and capacity development effectively and satisfactorily. This study describes the situation back in December 2012. It has now improved and

there is more engagement from local actors, a better perception of the local administrative authorities that preside over CLPAs, and the existence of specialized committees.

CLPA accomplishments in extension

As mentioned earlier, the CLPAs involved in projects are the truly functional ones achieving results in the demonstration and extension of technical or technological innovations. The CLPA members have learned to develop, use and disseminate conservation methods including octopus pots, reefs and artificial branches for the cuttlefish spawning season. Similarly, their role in participatory research and the monitoring of management initiatives has improved. Appendix 3 summarizes the lessons learned from CLPA visits (field visits).

C. Non-Governmental Organizations (NGOs)

C.1 OCEANIUM

OCEANIUM is a group of fisheries stakeholders, organized under the banner of CONIPAS and the Dakar School of Diving. It has conducted several initiatives for mangrove resource management, habitat protection, and restoration, and led extensive extension initiatives on cymbium protection and the prevention of juvenile captures. In this regard, OCEANIUM prints and distributes posters, and produces and projects films in fishing communities. OCEANIUM set up the first Marine Protected Area in Bambouc.

Structure and operation

OCEANIUM has an Executive Secretariat and three departments (Marine Protected Areas (MPA), Environment, Communication) working under the supervision of the Board. It also has field workers in all the regions in Senegal and in the village committees of communities where it works. OCEANIUM conducts its activities either directly, through the services of its members, or by contracting experts and consultants, based on the type of activity involved.

OCEANIUM has led successful extension initiatives by disseminating films, posters and print illustrations of its good governance and sustainable fisheries practices. It has contributed also to develop marine protected areas and several mangrove reforestation initiatives.

OCEANIUM coordinated 18 rural communities to develop sustainable fisheries management in the Sedhiou region, and plans to renovate the former fishing center in Goudomp.

To replicate and sustain its work, OCEANIUM has provided films and film projection equipment to some villages.

World Wildlife Fund for Nature – WWF

The World Wildlife Fund for Nature is an international NGO protecting the environment and wildlife settings since 1962. It has offices in over a hundred countries, including Senegal, where its Regional Office opened in 2000. WWF works with the Center for Oceanographic Research, ENDA REPAO, and fisheries and MPAs. It has contracted the GDRH project to restore ecosystems, map out a protected fishing area, promote eco labeling of lobsters and shellfish in Dakar Ouest, and introduce access rights. The Fund also trains members of the fishing communities concerned. WWF has MoUs on resource management with some partners - the Department of Marine Protected Areas (MPAs) and the USAID/COMFISH project – in relation to capacity development and good fishing practices, and has awarded prizes to women’s groups demonstrating best fishing practices.

Structure and operation

The WWF is a well-structured international agency with relatively substantial resources, experts and consultants. Consistent with its mission, the Fund runs its own initiatives but mostly provides non-operational project support. WWF also supports and works with other fisheries sector entities (ADEPA, West African Fish and Fisheries Association, OCEANIUM, ENDA, WULA NAFAA, FENAGIE PECHE, DPM, DPN, WAEMU, CSRP, etc.).

Accomplishments and major Initiatives

WWF is one of the agencies with the strongest presence on ground. It runs numerous activities and a diverse range of projects either alone or with partners. The Fund's initiatives mainly cover (i) environment and sanitation, (ii) communication, (iii) capacity development, (iv) equipment of stakeholders, (v) exchange visits and study tours, (vi) funding (lines of credit to CLPAs and fishing communities, creation of Mutual Savings and Credit Funds), (vii) capacity development for leadership and lobbying, (vii) training of girls and promotion of sustained access to education for boys in fishing communities, (viii) studies, especially on monofilament lines and professional organizations, (viii) production and distribution of films and organization of conferences, (ix) training of commercial fishing observers, (x) creation and networking of MPAs, (xi) prevention of juvenile fishing, etc. WWF also worked (xii) in Cayar, where it established a trial field station for several years. This was a pilot center where WWF carried out several different projects (capacity development for different stakeholders, local and external exchange visits, MPA mapping and support for effective management, communication initiatives and community radio stations, CLPA support, provision of materials and equipment, etc.).

Main strengths and weaknesses of NGOs

NGOs, including WWF, are international agencies or the local branches of such agencies. They have easier access to funding and stakeholders, which makes it possible to understand the status of the fisheries sector, its evolution and realities, and the new concepts on fisheries resources management. NGOs generally have skilled and experienced high and middle level managers from the target communities, and a long list of influential contacts to lobby, as appropriate, and contact the experts they need.

With regard to weaknesses, NGOs face internal structural challenges and lack representatives in the remote areas. This affects project supervision. NGOs most often run programs using a project approach based on the demands and needs of the community. But they spend much time raising funds, which overstretches the time between project design and delivery, and disrupts coherence. Heavy reliance on outsourcing (e.g. in many agencies, including even State entities) may weaken monitoring on the ground and undermine efficiency. Some entities, including the State, find it hard to streamline, synergize and align NGO initiatives with national policy priorities and strategies.

D. Professional Organizations (POs)

Professional organizations won public attention in the 1980s and established themselves quickly from the mainstream as entities that could play a decisive and responsible role in development through a new generation of leaders. The POs demonstrated a stronger commitment to their rights and duties, built partnerships and strengthened collaboration with the public administration. Many were dynamic and self-reliant, such as the National Federation of Fisheries Sector EIGs (FENACIE PECHE) and the National Collective of Senegalese Fishermen (CNPS). The rise of POs coincided with the era of

maturity in EIGs. These groups not only replaced cooperatives. They actually rose above the lack of solidarity and entrepreneurship so characteristic of cooperatives. FENAGIE PECHE and CNPS have been able to sensitize and train their members, build mutually reinforcing partnerships and increase their financial resources. This has won praise from many quarters, domestically and abroad.

Our case study is on FENAGIE PECHE, without prejudice to CNPS, which, although based in Mbour, maintains a strong network of partners.

FENAGIE PECHE is a Federation of different professional groups in the fisheries sector present along Senegal's coastal areas. It has several partners from local projects, NGOs and local and foreign associations that give its affiliates, in particular women fish processors, access to funding, equipment and training. FENAGIE has also worked together with ADPES (ex. Terre des Hommes) to establish a dozen Mutual Credit and Loan Funds, and collaborates with local suppliers who provide equipment to its members. FENAGIE mobilized its partners to build the landing dock in Foundiougne, to help develop the processing site in Thiaroye and to introduce digital registration of canoes.

Structure and operation

FENAGIE is structured into local EIGs and unions, at the divisional and regional levels, and into Federations at the national level. Coordinating these entities is a National Office with management committees that oversee the proper management and use of infrastructure and equipment available to the affiliates.

The Federation has set up specialized committees for its various programs and activities, such as the Training Committee, which is responsible for training members and building their skills.

To build capacity for its affiliates, FENAGIE relies on external expertise and has been collaborating with ITA, various projects, ASPRODEV and CNCR to which it is affiliated. FENAGIE is concluding negotiations with the Government of Italy for an extensive organizational and capacity development initiative aimed at the women's local unions in the Saloum Islands. It has already hired six (6) facilitators, bought a canoe and established a food store for this initiative.

Accomplishments and results

FENAGIE and its various partners have conducted several programs to develop the capacities of its members, especially in product storage and processing, and in leadership training. The Federation is currently running a technical support program together with the ITA and CORAF (an African research development and coordination center). The program seeks to enhance the quality of processed products, and provide storage materials and handling services to fish dealers. An association of SICAP women has already been set up for the extension of the new, improved products.

Main strengths and weaknesses

FENAGIE's strengths lie mainly in its strong presence across the national territory, the high number and wide variety of its membership, its ability for lobbying, and the many domestic and foreign partnerships it has established.

FENAGIE has some weaknesses also that are common to all POs. These weaknesses were brought to light by the Fisheries Department's audit some years ago and subsequently by the FAO study. They include: problems in leadership and the failure to replace decision-makers on a regular basis.

FENAGIE has a top-down organizational ladder instead of a bottom-up system. The affiliate community-based organizations appear simply as the local branches of the Federation, with power concentrated at national level, instead of the reverse. The Federation has made progress in quality, but still lacks capacity, and some organizations rely on a small group of leaders. Poor communication – irregular feedback on meetings, seminars or workshops - undermines monitoring and evaluation, leading to the duplication of efforts.

2.3.4 Extension Services and Relevance of Training and Extension Programs

The various organizations covered in this study lack a clear perception of extension. Even State agencies consider extension to be “project support and capacity building”.

There is no clear mapping of extension services. The public administration refers to them implicitly via other existing offices or divisions, but gives no clear indications on their structure, missions and resources. In the non-state entities, extension services are associated usually with programs, projects or different service delivery components, or during outsourcing arrangements for hiring consultants to support extension and capacity development.

The extension of materials, equipment and technological innovations is done primarily in projects and programs which use the mechanisms and resources required for experimentation and dissemination. Some examples are:

- The experimentation and extension of outboard engines and fishing equipment and accessores in CAMP;
- The experimentation and extension of boats with improved fiberglass technology in CAEP, CPEP and the Missirah Fishing Center (CPM);
- The use of octopus pots, artificial reefs and branches for cuttlefish in COGEPAS.

These projects and programs have obtained results, but monitoring and sustainability became difficult after the projects and programs ended.

There have been a series of training and capacity development initiatives. We think the results of such initiatives, although relevant, were inadequate due to the poor choice of targets, monitoring and duplication. This is why the Ministry of Fisheries called on Dakar Consulting &Ingéniering Group (DCEG) to study the stakeholder training and capacity development programs conducted before 2000.

The program was delivered or coordinated mainly by CAEP. The themes addressed are in the table below.

Table 2: Training Programs by the Ministry of Fisheries. (Source: DCEG)

For fishermen:

THEMES	**TRAINERS**
Safety at sea and handling of assistive devices for navigation and fishing.	- **Officials from the Ministry of Fisheries** - **Experienced fishermen** - **Rescuers**
Empirical knowledge of the marine environment	- **Fishermen – Officials from the Ministry of Fisheries, Consultants**
Product hygiene and quality	- **Officials from the Ministry of Fisheres**
Management of fishing units	- **Officials from the Ministry of Fisheries** - **Consultants**
Importance of savings and credit	- **Officials from the Ministry of Fisheries** - **Consultants, Mutual Credit and Savings Fund Managers**

For women fish processors:

Themes	Trainers
Processed product hygiene and quality	- Officials from the Ministry of Fisheries
Improved artisanal processing techniques	- Officials from the Ministry of Fisheries
Management of artisanal processing units	- Officials for the Ministry of Fisheries - Women processors/trainers - Managers of mutual savings and credit funds
Importance of savings and credit in the development of the artisanal fishing sector.	- Managers of mutual savings and credit funds for fishermen - Women processors/trainers

The DCEG also conducted other initiatives, in particular for FENAGIE PECHE on the sensitization and training of affiliates in:

- Literacy;
- Fish harvesting, storage and processing techniques;
- Finance, project and credit management;
- Organizational management;
- Marketing and sales techniques;
- Introduction to aquaculture;
- Hygiene and sanitation, etc.

ENDA-GRAF organized training seminars on product quality and hygiene for processors in Yoff and Thiaroye. The Ziguinchor-based SANTA YALLA women fish processors benefitted also from training and were awarded the President's Prize on two occasions. The DCEG, on the basis of its study, set out on a capacity development program, training:

- Fishermen in Hygiene and Quality, Storage Techniques, Fishing Techniques, Legislation, and basic fisheries management;
- Women fish processors in Processing techniques, Hygiene and Quality, forward planning techniques;
- All stakeholders in basic marketing techniques, Product Promotion and Distribution.

Many other stakeholder training or capacity development initiatives followed, focusing generally on similar themes: Hygiene, Quality, Fishing Techniques, Processing Techniques, Management, Functional Literacy, Marketing etc. The initiatives were in accordance with the missions of the executing agencies, in particular Professional Organizations such as FENAGIE PECHE, and Non-Governmental Organizations, in particular WWF. There were some collaborative activities also with UNIDO, for processors in Yoff, and with FAO, for processors in Dionewar, Moundé, Cayar, Yène, Joal and St Louis. As a result of these initiatives, some quite significant accomplishments were made in collaborative management projects (e.g. GIRMaC/GDRH, COGEPAS, Wula Nafaa).

In light of the foregoing, we think training and extension needs exist. The training and management services know about these needs and recognize the relevance of the themes covered. But several barriers to success still exist. This calls for adjustments to some aspects such as project site selection and priorities, thematic focus on concerns currently relevant to the sector, knowledge of legal and regulatory provisions, target selection, monitoring and evaluation, and replication.

We noticed that State officials faced the same concerns. They used to get training and capacity development under cooperation and fisheries agreements. But apart from a few projects, these officials today get only State support from the investment budget, which also needs to increase. These public services also need freedom to choose their areas of focus, priorities and targets.

Apart from these shortcomings, extension and capacity development programs have made progress. The DCEG evaluation report states that the results may not always be visible on the ground, but most

actors acknowledge they know more about fisheries management and development, safety at sea, and ownership of technological innovations.

However, we still see a vital need to improve problem solving in training and in communication, especially for artisanal fisheries.

With regard to communication, there have been numerous initiatives. Yet the stakeholders still complain they do not know the strategic policies in the fisheries sector, the laws in force, and the mechanisms for good governance, such as CLPAs. This simply means the communication methods and approaches used until now should be overhauled.

Artisanal fisheries strongly deplore the lack of training facilities. FENAGIE PECHE and some of its partners took steps, some time ago, to establish a center for continuing training. But the project was cancelled because the Federation was ineligible to run a training institution. We recommend that the project should resume under ongoing initiatives in the relevant departments of the Ministry of Fisheries.

Attention should be paid to an initiative in the Ministry of Technical Education and Vocational Training, aimed at studying ways to provide Technical Education and Vocational Training to an Optimal Concentration Area in Northern Senegal (Louga, St. Louis, Matam). The study focuses on fisheries (marine fishing, Freshwater fishing, and aquaculture) and covers all aspects of the fishing trade and related professions. It will set the stage for training centers and programs tailored to the realities and needs of target beneficiaries. Although confined to the north, there is need for MPAM, its services and projects to monitor this initiative and replicate it in other regions, considering the results, recommendations and proposals that will be made through an adaptive process.

SECTION III. Main Lessons Learned

The main lessons we have learned from this study, after considering the various entities covered and their approaches to extension and capacity development can be summarized as follows:

3.2.1. Slow integration of national strategy on extension

The Department of Oceanography and Marine Fisheries and its Artisanal Fisheries Unit have always attempted to do extension, develop capacity and organize stakeholder in fisheries programs. But their efforts were too fragmented and flawed by several limitations.

The extension work by CAMP and its predecessors covered only one component (engines and equipment for CAMP), leaving out the entire marine environment (e.g. development projects such as the PAPEC on the Petite Côte, or PAMEZ in the Ziguinchor Region). In the process, officials from the Department for Cooperation worked with the former DOPM to train, supervise and mentor fishermen. But there was no clear vision for extension with a national strategy, planned activities, set goals and adequate human and material resources.

3.2.2 Absence or weakness of institutional framework

CAMP achieved some encouraging results in extension of outboard engines and use of fishing accessories, materials and equipment. Its successive transformations to CAEP in 1994 and to CPEP in 2003 boosted progress in national policy for assistance, management, training of artisanal fisheries, experimentation and extension, and dissemination of fishing gear and accessories.

But CPEP existed only on paper. There were no follow-up measures to structure, develop and support it with material and human resources until it was shut down in 2006 due to operational constraints.

On the other hand, CNFTPA improved the institutional framework for extension and capacity development by formalizing customized and continuing training, thereby giving public and private partners in the fisheries sector access to training and capacity development. But appropriate supportive measures now need to be taken to enable CNFTPA to discharge its new duties properly *(continuing and customized training, vital for extension and stakeholder capacity development in artisanal fisheries). But unless channelled properly, the duties of CNFTPA may make redundant the IUPA, which primarily trains undergraduates and graduates in fisheries and aquaculture.*

State and non-State entities, as well as NGOs and POs, support extension projects and sometimes run their own initiatives. Yet, they have no institutional framework for extension and capacity development.

2.2.3 Outcomes of extension

The CAEP and CPEP achieved significant results in the training of Ministry officials and the procurement of annual budget allocations.

The DSPSP pursued similar efforts on safety at sea for artisanal fisheries, with the support of the regional services and coastal stations for surveillance (conducting annual outreach and extension initiatives on navigation and use of equipment for safety at sea (flares, GPS, radars etc.).

The DPM, on its part, designed plans to revamp its own extension unit. Together with PRAO, the DPM provided computers, mobile phones and Internet access to the staff in its respective units to improve information sharing, stakeholder training and project monitoring.

Some projects, such as PAPA SUD and COGEPAS that ended recently, also achieved encouraging results in extension and capacity development because they had skilled workers, appropriate equipment, adequate funding and elaborate structures. These projects trained and prepared local actors to have a satisfactory level of ownership (in the PAPA SUD, for example, the beneficiaries are using improved fish processing techniques with the infrastructure and equipment of IEIGs put in place by COGEPAS; implementing timely, well-targeted management initiatives; and have mastered the administration of innovative technologies: octopus pots, artificial branches for cuttlefish, MPAs, immersion of shell reefs, release of juveniles, etc.).

3.2.4. Lack of synergy and coordination

We observed there was no synergy and coordination between the respective entities involved in extension, particularly the non-State entities which often run their own initiatives based on the needs of their partners and the opportunities they have. Overall, the situation was far from satisfactory. There was an apparent lack of political will, on the part of the public authorities, and the poor showing of the national fisheries extension program, both of which put in jeopardy the steps taken to ensure proper monitoring, coherence and sustainability of extension and capacity development activities.

3.2.5 Main factors of success and failure / Strengths and Weaknesses

The fisheries sector encompasses a range of different experiences with several factors that may influence extension and capacity development programs. We have done a breakdown, in the table below, of the main factors we identified as factors of success, considered to be strengths, and the factors of failure, seen as weaknesses, which may hinder progress in extension and capacity development programs.

Table 3: Strengths and Weaknesses of extension initiatives

Positive factors (Strengths)	Negative factors (Weaknesses)
- Existence of an institutional mechanism - Well-defined and well prepared program - Good structure at national and regional level; - Strong involvement and outreach to stakeholders; - Well determined objectives, results indicators, and monitoring and evaluation indicators; - Good activity planning; - Availability of human and material resources;	- Lack of political will; - Institutional weaknesses - Lack of planning and programming of scheduled activities; - Excessive reliance on outsourcing arrangements; - Lack of motivation; - Lack of coordination; - Lack of human and material resources; - Lack of stakeholder outreach and involvement; - Lack or weakness of monitoring and evaluation;

The table sets out the shortcomings that negatively influence state entities, such as the lack of political will and institutional weaknesses, the absence of a designated entity for extension, the lack of planning, and the lack of motivation in and resources for officials.

We also observed some challenges in donor projects for extension and capacity development, but the factors of success are more than the weaknesses because objectives are defined, monitoring and results indicators exist, and resources are available.

3.2.6 Role of Research and Science-based Knowledge

In the USA, considerable progress has been made with the SEA GRANT system. But the situations and realities in the USA and Senegal are so different that it would be difficult to implement the same mechanism in Senegal in the short term. It may be interesting, nonetheless, to draw lessons from the Sea Grant experience and use them to capitalize on progress in science that can benefit fisheries policy, resource management and relations between fishing committees and stakeholders, on one hand, and between fishing communities and State Authorities, on the other.

At present, CRODT is the entity working directly with fisheries departments. It has no field units, only researchers in the major fishing centers such as Mbour, Joal, Cayar, St Louis, Hann, as well as some specific and more elaborate projects on other relevant sites.

There are areas where CRODT can do better. It can, for example, strengthen its internal systems and increase its presence on the ground. This would require budget support to employ the relevant

expertise, develop capacity, improve operations and increase material resources and equipment. CRODT provides support to participatory research projects. To be more efficient and give the stakeholders a more active role in these initiatives, CRODT needs to take a more focused approach. This would also address some of the complaints the stakeholders made during our field visits.

A number of academic or research institutions are interested in certain aspects of fisheries, marine resources, the coastal environment, marine and wildlife management, etc. Measures should be taken to contact the Geography Department, the Institut Fondamental d'Afrique Noire (IFAN), IUPA, the Faculty of Science, the Veterinary School, the Institute of Environmental Sciences (ISE), ITA and some of the departments in the Ministry of Environment. They carry out research and provide knowledge on *fisheries that can be useful to the services and ongoing projects in MPAM. The Head of the Department of Marine Biology indicated that IFAN is working to reproduce and grow marine and freshwater species together with IUPA and COMFISH. Training institutions and research institutes accept many interns and PhD students who can carry out surveys and research on several topics of interest to fisheries projects and programs. In line with their needs, the fisheries projects and programs can even propose topics for study and research to the interns and PhD students.*

The training schools, which are under the supervision of the Ministry of Fisheries and Maritime Affairs, should not be left out of this process.

SECTION IV: Recommendations and Action Plan Outlines

The recommendations and action plans presented below have been designed to enhance the integration of extension and capacity development in fisheries programs.

4.2 Improve the institutional framework

The legal and regulatory instruments in force make little provision for extension and capacity development. Institutions are set up, including offices and divisions, but they exist only on paper. Steps must be taken to organize them, define their scope of activity and provide them with material and human resources to discharge their duties properly. Efforts should be made also to train staff and help them specialize in extension, bearing in mind that extension work is a profession that people learn to do, either in specialized training schools or through hands-on training.

4.3 Train and resource good governance organs (CNCPM, CLPAs)

The fisheries policy and fishing code are two indicators of the Government of Senegal's political will for participatory and collaborative fisheries management based on close collaboration and shared responsibilities with fisheries stakeholders and fishing communities. But, unless the entities in charge of fisheries are competent to practice good governance, this political will shall not translate into success.

4.4 Synergize and coordinate projects

To avoid "duplication" on the ground that causes officials and stakeholders to deal with the conflicting results achieved by these project activities efforts will be coordinated and synergized.

4.5 Ensure proper monitoring and evaluation of the programs

Proper measure and evaluation of the program activities will be implemented to ensure that set goals are achieved, to avoid eventual distortions and deviations, and to intervene in a timely manner and make the adjustments deemed useful.

4.6 Ensure outreach on and communication of policy options, legal and regulatory provisions

Outreach and communication efforts must be undertaken on policy options, legal and regulatory provisions. These elements are sometimes unknown or are interpreted wrongly by most stakeholders and some officials. Stakeholders often ask for the extension of the Code and CLPAs. Therefore, the time is right to rethink the approach and techniques of communicating and disseminating information to ensure that set goals are achieved, well understood and owned by the target communities.

In the same vein, outreach to and training of stakeholders should be done under the best conditions, and in a specialized facility. There should be some brainstorming on a number of different strategies, including: possible ways to involve the Schools under MPAM, resume the FENAGIE PECHE training center project, build on the initiative conducted by the Ministry of Technical Education and Vocational Training, and rehabilitate the CPEP.

4.7 Promote greater use of scientific knowledge and progress in developing fisheries

Ensure that CRODT initiatives are more efficient by signing contracts, as was the case for the ADUPES project. Terms of reference should be drafted with a clear set of goals, budgets, and monitoring and evaluation by the Ministry of Fisheries. - Get closer to and establish collaboration with all the scientific institutions of learning and research that are involved in fisheries, marine resources and the coastal environment.

- To enhance efficiency in the support from CRODT and the other institutions concerned, building on the American model, efforts should be made to pool together all the activities and scientific knowledge of these institutions *so as to harness the synergy in their actions at the central level and in the coastal areas. Accordingly, steps should be taken to put in one basket the actions of CRODT and the institutions considered. Other structures could be involved in this collaborative process based on their skills and competencies. As an example, we should explore the case of HASSAM which, at national level, coordinates numerous activities on the marine environment.*

4.8 Coordination of efforts

Marine reserves and coastal environmentefforts shall be coordinated **with the Ministry of Environment,** which is responsible for MPAs.

Action plan outlines

The idea here is, building on the key recommendations proposed, to tease out ideas on actions we deem fundamental for the national authorities or the COMFISH project to implement urgently, so that they can more easily implement the major program of said project.

4.8 Take urgent measures to coordinate actions and initiatives

For the state authorities

As we found out during our field visits, stakeholders are sometimes confused and have difficulty differentiating between the ongoing initiatives and the goals they out set to achie*ve. In our opinion, urgent measures should be take to coordinate efforts under the auspices of the Department of Fisheries, which already has a Project Monitoring Bureau and a Bureau for Coordination of Regional Services and Monitoring of CLPAs.*

4.9 Show the political will to promote extension

Lending more support to extension services, by empowering them to schedule their actions, and by providing them with the material and human resources require illustrates the political will to promote extension.

The real challenge here is to set up a crosscutting mechanism that can synergize and coordinate all the initiatives at the national level. This was the case with CPEP, which was dissolved and then reopened in theory without a concrete structure. It may be useful, therefore, to reactivate CPEP, structure it, appoint a coordinator to head it, and make available the resources it needs to function.

4.10 Ensure the functionality of CNCPM and the CLPAs

Considering the problems of Fisheries Development and Management, the establishment of governance structures such as CNCPM and the CLPAs is a major step forward. But, notwithstanding the importance of these structires for fisheries management and collaborative management, most of them are not even functional. *To address this, the authorities should take the appropriate steps to organize these structures, understand their missions to make them fully operational and capable of running programs for the development of fisheries, particularly in their local areas.*

4.11 Establish a mechanism for collaboration, harmonization and synergy in research initiatives

Such a mechanism should be established under the auspices of the Ministry of Fisheries. This is to pool together the initiatives of all institutions involved in fisheries, with a view to support their activities, projects and programs on fisheries, and to put at their disposal the scientific knowledge and experience of the research institutions. *The mechanism will get the resources required to define the modalities for management, planning and coordination of the initiatives, share the roles and responsibilities of respective stakeholders, and set the terms for the extension of the scientific knowledge of the institutions concerned.*

At COMFISH field visits show that fishing communities and practitioners have high hopes in, and great expectations from COMFISH. In our view, this makes the project's success a truly fundamental link in the fisheries sector's development chain. For COMFISH to succeed, proper preparations must be made. That is why we think taking certain actions, as a matter of urgency, would be useful for the smooth running of COMFISH. This becomes even more necessary when one considers that CLPA members are in support of this approach. For the CLPAs, COMFISH has an approach that is reassuring to the stakeholders. The project works together with local actors, and has engaged with them extensively to raise their awareness and to take account of their concerns.

4.12 Expand outreach to CLPAs to improve their functionality and ability to perform their duties:

Efforts have certainly been made to sensitize local actors, for they claimed they were simply waiting for the action delivery phase to begin. But after careful observation, some gaps were identified on the ground. These include poor understanding of CLPA duties and responsibilities in good governance at the local level. *It is useful, therefore, to redefine the component elements of local governance and accountability in the fisheries policy, and the role of the CLPA and its respective organs.*

4.13 Ensure that CLPAs are functional

After ensuring good ownership of the fisheries policy and the missions of CLPAs, *it is useful to provide these organs with the resources they need, and to train them so that they become fully accountable. Any support COMFISH can provide in this regard will be appreciated.*

4.14 Ensure strong ownership of the Conventions

Conventions are prepared and implemented without opposition, but they are new to many. Generally, the measures in these conventions do not go against the provisions in existing laws and regulations, but conventions can contribute to complicate the provisions already in force. There are plans to set up new entities (Coordinating Committees) with their own missions, whereas new structures (Coordinating Body and Local Rural Councils, Commissions) have already been introduced, as provided in the standard rules and regulations.

We called attention to this issue at a workshop held by an association of stakeholders to point out that "the structure and functions of CLPAs must be freed from the sluggishness caused by the existence of several structures, undefined responsibilities and duties which are somewhat dispersed and have no clear execution plans, set goals, or opportunities for monitoring and evaluation".

To get such structures to function well, it is necessary to carry out proper outreach, capacity development, training and education of stakeholders, and to ensure there is proper ownership by all stakeholders.

Moreover, the CLPA has only one chairperson, who is the local authority. Facilitation and secretarial duties are in the hands of the Secretary, who is the official in charge of Fisheries. The Minister of Fisheries has to give approval before any measure can be applied.

Therefore, it is necessary to ensure Conventions are well anchored in CLPA systems by clarifying roles and modalities for operation, and by avoiding any form of confusion in duties and responsibilities and all conflicts of jurisdiction.

4.15 Motivation

Experience gained from the field suggests that motivation is a key factor both for stakeholders and officials, and in this regard, certain behaviors have already been formed. *Accordingly, it is useful to consider the importance of motivation in the implementation of any project, including COMFISH.*

4.14 Monitoring and Evaluation

Many projects encounter difficulties in monitoring and evaluation, and this puts a burden on activity effectiveness and conformity with set objectives or missions. It especially makes it difficult to sustain the gains made. Instead, they erode with time and disappear at the end of said projects. *Consequently, there is need to place a particular emphasis on monitoring and evaluation and to spell out all the related parameters and indicators.*

4.15 Capitalize on past experience

Collaborative projects and programs have been implemented with varying degrees of success (GIRMaC, GDRH, COGEPAS, WULA NAFAA), and assessments of collaborative management have been done. *COMFISH should draw on all these past experiences, successes, failures, strengths and weaknesses, and take them into account in its own interventions.*

Finally, we deem it useful to state that the initiatives mentioned above merely outline ideas that could be further explored when need be and where relevant. However, they include some recommendations and ideas, which, in our view, reflect the lessons learned from the face-to-face interviews, literature review and field visits conducted during this study.

Conclusion

At the request of the Department of Marine Fisheries, IUPA commissioned this study to review the state of fisheries extension and its organizational structures in Senegal.The study is expected to contribute in providing COMFISH with information it can use to properly implement its program of support to Senegal's fisheries policy. In accordance with the information outlined at the beginning of the report, extension is interpreted in several different ways, and is indissociable from the problems of outreach, training, and capacity development. Face to face interviews, field visits and desk research was conducted to review the state of extension and the structures concerned. It was observed that in Senegal's early post-independence years, extension was a priority for the Agriculture sector, including Fisheries. But with time, the emphasis on extension dwindled in the fisheries sector. The needs still existed, but there was a lack of political will to address them comprehensively. At the institutional level, the mechanisms put in place or talked about, existed only on paper, due to the lack of resources, adequate structuring and monitoring. Considerable progress was made, nonetheless, with the founding of CPEP and CLPAs, but these structures failed to achieve the expected results. However, several state and non-state entities embarked on special extension projects and achieved significant results in outreach, training, capacity development and technological innovation. But the results were not always carried forward, owing to the constraints and gaps we have highlighted in this study. The experiences of the respective entities (including Ministry of Fisheries, Technical Departments and Training Schools, NGOs and POs, projects and programs) were analyzed and lessons learned. Recommendations were made on ways to improve the current situation and facilitate the implementation of COMFISH based on the results of this study.

Appendix 1: Terms of reference

Introduction

The primary goal of the USAID/COMFISH project is to support the Government of Senegal's efforts to implement its fisheries sector policy reform in accordance with the Fisheries and Aquaculture Sector Policy Letter.

It is in this context, and as part of the activities carried out by the University Institute of Fisheries and Aquaculture (IUPA), that this study will be conducted for the USAID/COMFISH project, and in collaboration with the Department of Marine Fisheries and other project partners. The study shall conduct a diagnosis of the organization and ways of working of fisheries administration services and other actors (NGOs, training and research institutions, socio-professional organizations), which are engaged in extension in the marine fisheries sector.

The results of this analysis will be to test and demonstrate new approaches and tools used in the USA and designed to improve the capacity of institutions involved in extension and scientific education. Accordingly, the USAID/COMFISH project, through the experiences of the "Sea-Grant Program", aims to develop locally appropriate activities to strengthen the human capacity of national extension services in the management, research, and training of marine fisheries.

These Terms of Reference describe the conditions for undertaking a study on the evaluation of existing programs and capacity for extension in various government structures and other actors involved in the extension of marine fisheries. It shall also identify the weaknesses in key programs in this area and make recommendations.

Context

The community-based collaborative fisheries management system builds on the knowledge, experiences and fisheries management initiatives of local communities. But it is necessary to integrate scientific knowledge in the system so that the administration and the fisheries stakeholders are able to interpret results on the state of the stock, its evolution trends, and the impact of implementing certain fisheries management methods.

It appears little attention has been paid to the inclusion and adaptation of modern scientific methods, especially in doing stock assessment with data on captures, effort and abundance through scientific surveys on fishing (trawling and acoustics). The approach, based on using scientific knowledge, is consistent with the main elements of collaborative management and has often produced the best results in the sustainable management and restoration of fisheries resources.

In the United States of America, for example, fisheries scientists and managers who work with industry stakeholders and coastal communities use a dynamic process which combines the best scientific information available with local knowledge to inform final decisions. This strategy has proved useful for implementing management measures agreed with stakeholders, producing exceptional results for the sustainability of resources and providing positive economic benefits to fisheries stakeholders.

This transfer of scientific information, developed by specialized extension programs, draws from communication that is based on human relationships, understanding of several important aspects

(economic, technical, socio-cultural), and the preservation of resources through responsible and sustainable fisheries. The underpinnings for such content often reside in a policy framework for promoting the value of fisheries resources and communication that focuses primarily on the sustainable use of these resources through continued sensitization of fishermen.

In Senegal, the Ministry of Fisheries and Maritime Affairs has always used extension as the key delivery mechanism for its socio-professional agenda for fishermen. In 1972, the Ministry established the first Boat Motorization Support Center (CAMP) to cover the entire coastline. In 1994, CAMP became the Center for Assistance, Experimentation and extension for Artisanal Fisheries (CAEP), and then the Center for Assistance and Experimentation on Fisheries (CAEP). In 2003, CAEP was transformed into the Center for Development, Experimentation and extension for Fisheries (CPEP).

CPEP works with fishing communities, including artisanal fisheries, to promote awareness of rules in fisheries management, hygiene and safety on board fishing vessels, a better understanding of fishing techniques and gear, the establishment of fishing cooperatives and the promotion of activities by women fish processors.

These different extension programs used an interventionist approach to establish organs for the promotion, participation and training of fishermen, but they failed to cover all the changing needs of fishermen and, despite the initiatives taken by State and independent partners, could not hit the desired level of satisfaction.

This is why it became necessary to carry out a diagnosis of national extension methods for Senegal's fisheries before conducting capacity development with support from the USAID/COMFISH project.

It is in this context that the Department of Marine Fisheries requested the USAID/COMFISH project to carry out a study on national capacity for extension in the fisheries sector.

Study Objective

The objective of this study is to conduct a thorough diagnosis of extension in Senegal's fisheries sector, with a view to facilitating the rollout of the USAID/COMFISH project's plan for human and institutional capacity development for vulgarization.

This involves the:

- Identification and analysis of the administrative and legislative framework for extension in Senegal's fisheries.
- Identification and analysis of activities conducted by CPEP and other organs for extension in the fisheries sector.
- Analysis of the capacities, weaknesses and relevance of programs driven by State services responsible for extension, facilitation and training in the marine fisheries sector.
- Identification of the constraints on extension services;
- Proposal of solutions and an action plan for an artisanal fisheries extension system.

Duties of the consultant

The consultant shall:

- Define the term "extension" in relation to other terms used in the transfer of technical, legal and administrative information to fisheries stakeholders for marine fisheries management.
- Identify State and non-State entities, paying attention to their organization, role, responsibilities and operationalization, as well as their administrative, legal, and technical services responsible for **fisheries management** at local and national level.
- Identify State and non-State entities, paying attention to their organization, role, responsibilities and operationalization, as well as their administrative, legal and technical services responsible for **the training and retraining** of fishermen, fisheries officials, engineers and senior officials in the fisheries sector at local and national level.
- Identify State and non-State entities, paying attention to their organization, role, responsibilities and operationalization, as well as their administrative, legal and technical services responsible for **extension** in the fisheries sector at local and national level.
- Analyze the relations between State-run technical services and local organizations (CLPAs and others) for extension, with a view to overcome the challenges of providing effective support to them.
- Identify the organizational and operational weaknesses of technical services for extension and propose the necessary institutional adjustments for effective trainining and supervision.

Methodological Approach

The study proceedings shall include:

- A preparatory meeting with IUPA, and eventually with the lUSAID/COMFISH project's local team and DPM, to build a shared understanding of the mission and present the methodological approach defined by the consultant;
- A literature review phase and meetings with the different structures and persons involved in data collection;
- An analysis of the data and the drafting of the preliminary and final reports;
- A feedback session on the study results with the project partners;
- The preparation of the final report with remarks and input from IUPA, USAID/COMFISH, and other partners.

A selected list of services and departments concerned

- Ministry of Fisheris and Maritime Affairs
- Department of Marine Fisheries
- Regional services of the Department of Marine Fisheries
- CLPAs (in COMFISH intervention areas)
- Center for Oceanographic Research - Dakar Thiaroye

- Research and Planning Unit
- Inspection services
- University Institute for Fisheries and Aquaculture
- National Training Center for Fisheries and Aquaculture Technicians
- Other services the consultant will deem necessary to meet with

Expected Outputs

- The consultant shall conduct a literature review, discussions and open-ended interviews with actors in the field, including public services in charge of fisheries, research and training institutes, collaborative fisheries management organs, socio-professional organizations, NGOs, etc.
- The consultant shall provide evidence of these meetings by presenting attendance sheets signed duly by the interviewees.
- The consultant shall provide to IUPA one hard copy and one electronic copy of the draft report.
- Pre-validation of the draft report by experts from the USAID/COMFISH project, DPM, and IUPA.
- The consultant shall submit a final report with all the relevant amendments, remarks, comments and suggestions from the partners.
- After submitting the final report, the consultant shall organize a workshop, with the support of the IUPA, to present the results of the study to the other project partners. The costs of organizing this workshop shall be covered by the consultant and shall represent at least 5-10% of the contract.
- The final report, including the results of the workshop, shall be submitted to IUPA in 3 hard copies and one electronic copy in Word format, for the text, and in Excel format, for the tables.
- The report shall also include maps, an executive summary in English and French, the list of structures and persons encountered for the purpose of the study, the ToR, and a list of the main issues addressed (interview guide or survey form) during the interviews.

Outputs/reports delivery timeline

The Consultant selected for this assignment shall prepare a detailed implementation schedule, as an integral part of his/her duties, taking into account the following deadlines:

Outputs/Reports	Duration	Payment modalities
Scoping report (methdology)	5 calendar days after signing the contract and the notification order to start service	**20%** of contract amount payable (not including amount reserved for pre-validation and validation)

		after validation of the methodology orientation report.
Draft report	20 calendar days after the scoping report validation meeting (methodology)	**40%** of contract amount payable (not including the amount reserved for pre-validation and validation) after draft report validation report, if the consultant makes an undertaking in writing to include the remarks and comments from the workshop
Final report	10 calendar days from the date of the draft report validation meeting	**40%** of contract amount payable after submission and validation of the final report and 100% of amount reserved for pre-validation and validation of study results

The contract period is 40 days from the notification order to start service.

The reports shall be written in French. All the reports shall be submitted in electronic format (on CD-Rom or Flash disk) and in five hard copies.

Consultant's profile

The Consultant shall have proven experience in fisheries, extension and organizational audits. He shall also have a deep understanding of the ways of working of the fisheries administration, CLPAs and socio-professional organizations involved in the fisheries sector. Knowledge of the sociology of the target local communities will be an asset for the Consultant.

The expert shall demonstrate, through similar missions, that s/he has proven hands-on experience and solid knowledge of similar missions.

The Consultant's service offer shall include a duly signed copy of his/her resume.

Study duration

The contract shall last 40 working days.

The draft study timeline begins from September 26 to November 30, 2013. The draft report shall be submitted on November 10, and the final report on November 30, 2013.

Additional information

For any further information, please contact Mr. Alassane Sarr, IUPA focal point, at the following address: UCAD II/IUPA. Tel: 776568907 or 33 8645981. E-mail: alassanesarr@hotmail.com

Appendix 2: Final report on the farming season sensitization campaign on artisanal fisheries in food security (DPSP)

MINISTRY OF FISHERIES AND MARITIME AFFAIRS

DEPARTMENT FOR FISHERIES PROTECTION AND SURVEILLANCE (DPSP)

FINAL REPORT ON THE FARMING SEASON SENSITIZATION CAMPAIGN

ON ARTISANAL FISHERIES IN FOOD SECURITY 2013

Campaign proceedings

The 2013 farming season campaign was run in two (02) phases. The first phase focused on the launch ceremony on August 22, 2013, and the second on field missions across the country.

Launch ceremony

The campaign launch ceremony took place on the Yoff Tonghor beach. It was chaired by the Minister of Fisheries and Maritime Affairs in the presence of religious, administrative and customary authorities, professional organizations involved in fishing, and all the officials of the Department of Fisheries.

The Minister of Fisheries and Maritime Affairs used this ceremony's high media impact to pay his respects to the nation after the painful events of March 23, 2013 in St. Louis that resulted in the death of 23 fishermen. But he also seized the occasion to caution all those who go to sea, emphasizing that they should keep strictly to safety standards and regulations in line with all the efforts made by the State to promote safety at sea.

The Minister put emphasis on the actions planned in the short term, including validation of the National Plan to reduce the loss of human life and material (in the drafting stage), the establishment of a system for geographical location of artisanal fishing boats (still under study), and the modernization of the artisanal fleet.

To conclude, the Minister paid tribute to all the organs involved in the management of maritime safety. He also applauded the warm hospitality of the communities in Yoff and their commitment to consolidating the gains made in compliance with existing regulations.

Field missions

The program began operating in the Center, Northern and Southern regions of the country only from August 27th, 2013.

DPSP's duly authorized teams travelled to all the program sites to provide training with modules designed for, and adapted to this program.

To better sensitize fishermen to the measures they need to take under certain circumstances, the training teams, among other issues discussed, put an emphasis on:

- The utility of wearing safety vests;
- The most frequent causes of accidents at sea (precautions and measures to take);
- Boat safety with minimum equipment on board;
- Sailing techniques for artisanal fishermen and use of weather information;
- Current safety regulations for marine fisheries.

These modules were used to train 30 fishermen on each site, except in Elinkine, where 60 fishermen were trained. The teaching/learning materials used for the campaign were:

- 1 banner;
- 20 copies of the fisherman's handbook;
- 1 first-aid kit;
- 10 hand flares;
- 10 rocket parachutes;
- 1 fire extinguisher (A B C);
- 2 radar reflectors;
- 16 safety jackets.

In addition to classroom training, public animation events were organized to reach out to more people. The public events included the sharing of gifts (safety jackets, face caps, t-shirts, etc.).

Results obtained

1. Results obtained among targets:

In this campaign, 570 artisanal fishing boat captains were trained across the 18 target sites. A fishing boat captain commands a crew of at least 05 persons. Hence the training can benefit over 3000 fishermen, according to the assurances given by the auditors at the training.

Apart from this, the launch ceremony brought together several hundreds of persons, while the public events organized after classes pulled a huge crowd on each occasion.

Still on results, safety habits seem to have taken root among the fishermen who attended the training, judging from the number of safety jackets that were distributed during the campaign (660 life vests in all).

2. Needs assessment and identification of related problems

There are several problems and needs, but the ones mentioned most often by the fishermen and administrative officials are summarized in the points below, as follows:

For fishermen

- the quality of safety jackets is sometimes poor;
- an adequate number of jackets needs to be available all the time;
- safety jackets, at 2500 CFA francs a piece, are costly and should be cheaper;
- continuing training is required, especially for young fishermen;
- adequate and affordable safety materials other than life vests must be available; sea patrols and strict compliance with regulations need to continue;

For the Administration

- Resources for the sensitization campaign are inadequate
  A budget line is needed for the safety of artisanal fishermen
  DPSP requires more material and human resources.

Appendix 3: Summary of Field Visits

Thies Region

I. Mbour Division: Ngaporou, Mbour, Joal Nianing

Mbour division was chosen as an example because of the importance of fishing and especially the many experiences in collaborative management that are going on there presently. Senegal's first collaborative management experience was in this division. But this summary includes the information and lessons learned from the other sites as well.

1. Ngaparou

The Ngaparou site is part of the Sindia CLPA. Territorially, Ngaparou is under the Sindia sub-division and the Mbour division. The economic activities in Sindia's central area, including Nianghal, are essentially around tourism and fishing, which employs a good portion of the population. The Ngaparou site is among the GIRMaC's four pilot sites.

Collaborative management initiatives selected: Development of Lobster Fisheries (Biological rest and prohibition of juvenile captures), Establishment of a Marine Protected Area (MPA).

Situation before collaborative management: The ground was favorable because the actors and people were aware of the scarcity of resources, especially lobsters that had recorded decreases in yields and sizes.

Main implementation modalities

Good preparation with numerous awareness sessions and discussions to know the status of the fisheries and actors, and to select initiatives. The whole process of consultation and validation was conducted properly, especialy with the creation of a contact group, the diagnostic phase, the holding of a Local Development Committee and a validation workshop prior to approval by the Minister of Fisheries (Minister's Order for the implementation of management initiatives), after endorsement by the National Advisory Council for Marine Fisheries (CNCPM) and DPM.

A Local Fisheries Committee (CLP) was established in 2006, with the various technical committees, while the MPA was created in 2OO9. With the presence of a Fishermen's Center, which also harbors the Chief of the Fisheries Control Post, it was easier to hold all the meetings and consultations. The local actors finally took ownership of the process. The entente between them was good and they complied with all the measures agreed, including the MPAs and regulated fishing areas, and the sizes and biological rest periods proposed for lobster stocks.

The commitment of stakeholders and emphasis on social aspects contributed to the success of these initiatives. In this case, the stakeholders devised alternative systems of funding (contributing money to buy fuel after selling their production). They provided support to the communities and stakeholders, using their own money to purchase and maintain buoys. The village chief even agreed to mortgage his house just to be able to buy fuel for the stakeholders.

Monitoring and support from the project and the Administration were below expectations. Monitoring was difficult because migrant fishermen went regularly to catch fish in the MPA and did not observe

the restrictions on the Regulated Fishing Areas. Sanctions were weak and not dissuasive enough. Repeat offenders were never penalized, although a marine officer was in the surveillance team. A lack of motivation was observed among members of the surveillance committee, and their number has decreased considerably.

According to the respondents, the participatory research work by CRODT faced some major problems: poor stakeholder involvement, understanding and ownership of the methodology; lack of agreement on the sampling system; and no feedback of results after an eighteen (18) month period of experimental fisheries.

Way forward

The actors are concerned that PRAO is going to continue the program. Their wish is for the project to extend to the neighboring villages. They want more support, particularly when it comes to the monitoring of initiatives and to the consideration of stakeholders' views and needs on the Re-employment Fund and the income generating activities component.

The arrival of COMFISH was applauded far and wide. The project's approach, based on a broad-based stakeholder involvement and consultation process, proves to be a source of satisfaction and reassurance for the local actors. But these actors also want:

- more sensitization of actors and training of Leaders, especially on the management of sardinella;
- more effective surveillance activities and closer monitoring of initiatives with increased support for participatory research.

2. Mbour

The Mbour center is one of the major fishing centers in Senegal, and its stakeholders have benefitted from many support projects and programs. Mbour division, which is the center's territory, has harbored the key collaborative management sites of the COGEPAS project.

Collaborative management initiatives selected: The Octopus biological rest initiative, with COGEPAS, and the Sardinella Development and Management Plan that aims to increase the length at first capture from 12 to 15 cm and the regulation of night fishing, which is prohibited during certain periods.

Situation before collaborative management: There was some experience of interventions by the State, NGOs and POs. In spite of all this, there are several individuals within communities and stakeholders as well who sometimes let their personal interests to override the public good.

Main implementation modalities

This center has had observer status in the COGEPAS project for one year and acquired experience in State projects and interventions. But the actors do not always agree when it comes to implementing initiatives, because many of them are migrants.

On the whole, the local actors comply with management measures. Yet, they have many differences when it comes to the biological rest period for octopus, which is between August and October, a period considered to be inappropriate. Other periods have been suggested, including June/July or March/April. At this level, the players believe that with the advent of annual climate variations,

changes and other ecological disturbances, research efforts need to be brought up to speed and studies on octopus spawning periods conducted again to identify the best biological rest periods for octopus.

Problems with stakeholder commitment have been observed sometimes. Likewise, complaints have been made that individual interests sometimes take precedence over the public good. The center was granted observer status for a year. But there are limitations in its ownership of the collaborative management initiatives proposed by COGEPAS, because no one did the preliminary work required in Nianing. Some actors even contest the measure taken to increase the length of sardinella sold in the market from 12 cm to 15 cm, although the measure was adopted freely.

Octopus sales have been difficult since the new season, because factories offer lower rates. But it appears this comes more from bad practices, which consist in immersing the product to absorb water and gain weight. Some actors even say that sand is introduced in octopus to increase its weight.

Monitoring and surveillance

Monitoring and surveillance need to be reinforced, for some individuals are more concerned with their personal interests. To make matters worse, several actors, who are not fishermen, buy equipment and employ fishermen. This affects compliance with management measures on sardinella, in that fishermen from the Dakar region come and capture and sell juveniles on site.

Participatory research

In this area, efforts have been made primarily to extend the Nianing experience.

Way forward

Since the previous initiatives faced many problems, the people are now placing their hopes in COMFISH, which has worked more closely together with stakeholders and used consultations and discussions to understand and ensure ownership of the measures that will be agreed. The same approach was used for sardinella. Stakeholders are hoping this approach will be maintained throughout the COMFISH initiative, and that efforts would be made to improve monitoring and surveillance of the measures agreed for implementation. Emphasis should be placed also on participatory research to properly support the measures agreed and to reconsider which period is best for the biological rest of Octopus.

3. Joal

Like Mbour, Joal is a large fishing center where activities go on all year. The actors have long experience dealing with initiatives by the State and other partners. On the whole, there are several similarities between Mbour and Joal when it comes to the state of fisheries and the stakeholders concerned, for they harvest fish from the same fisheries and therefore face the same challenges.

> *The management initiatives include Biological rest for octopus, Regulation of night fishing, and the increase, from 12 cm to 15 cm, of the length of sardinella authorized for capture. The other management initiatives are the establishment of a Marine Protected Area and artificial reefs, as well as a management plan for Thiof with fewer small size hooks to be used together with bigger hooks. This center has the same challenges as the one in Mbour regarding the best biologic rest period for octopus and the size at which to authorize the harvesting of sardines for sale. Efforts should be made to update the scientific research that was used to determine the biological rest period for octopus and the length at maturity for*

sardinella. Furthermore, the problems encountered in the sale of octopus are the same as in Mbour.

The importance of the MPA and the reefs in this area can be seen in the way the quantity and diversity of species are increasing, and also in the way these species are being replenished. Nonetheless, the MPA is vast and far from the beach, and this poses real problems for monitoring. The recommendation, in this regard, is for Ministry of Fisheries to collaborate closely with the Ministry of Environment, which is the authority responsible for Marine Protected Areas and Parks.

Going forward, the stakeholders rely heavily on the Sustainable Fisheries Management in Senegal (ADUPES) project to improve the management of octopus, and on COMFISH for the management of sardinella. It will be useful also to improve awareness among stakeholders, the use of scientific knowledge in the management measures agreed, and the support provided for monitoring and surveillance.

4. Nianing

Nianing is an important center for harvesting all species of fish, and especially for harvesting and processing shelffish. Nianing, like Ngaparou, is under the CLPA in Sindia. It was the first collaborative fisheries management site and a pilot location in the COGEPAS project.

Collaborative management initiatives

The initiatives in this center focused on biological rest periods for Octopus and Cymbium. This experience was well prepared and monitored for one year. There was a series of meetings and discussions between CRODT and the stakeholders which made it possible to build consensus on the species selected and the rest periods agreed.

Implementation

With the discussions held and the consensus obtained, collaborative management initiatives were conducted in a proper and satisfactory manner. Accordingly, the initiatives expanded progressively in Pointe Sarène and then to Mbour division as a whole.

Monitoring

At the beginning, there was no problem with monitoring, as the fishermen supported the initiative and were committed to it. Monitoring was facilitated also by the fact that the society is organized in age groups with mechanisms for communication and discussion between all its members. This was the reason why the Local Fisheries Council and the Management Committee that was established, worked smoothly together. There was good ownership of and compliance with the initiatives agreed, namely biological rest periods, use of octopus pots, and immersion of baby cymbium. There were supportive measures also, including training on the biology of the octopus, the opening of a gas station and support for the commercialization of products to factories. With time, differences surfaced over the biological rest period, contested by some actors, as well as difficulties in the sale of octopus due mainly to the bad practices of some wholesalers who soaked the product in water to increase its weight. Concerning the biological rest period, there were times when the personal interest of some individuals seems to have been the cause of certain challenges. Hence, it seems appropriate to update the research conducted by CRODT, so that the impact of annual climate variations and change is understood.

Way forward

PRAO will support stakeholders to establish the Marine Protected Area as planned, with the support of OCEANIUM. As for COMFISH, its approach is good, for it buids on the consultation and consensus that prevailed when the Sindia CLPA Local Convention was being prepared. Support is expected especially to scale up sensitization and capacity development for fishermen, so as to ensure strong ownership of the management initiatives, enhance CLPA ways of working, and improve marketing efforts. Steps should be taken also to ensure proper organization, provide the resources to track the management measures agreed, and adopt rules and regulations for surveillance.

II. Cayar Division

Cayar site

Cayar is one of the major fishing centers in Senegal's north coast with a considerable volume of fishing activities, particularly during the cold season. It hosts migrant fishermen who mostly are stakeholders from Saint Louis. The stakeholders have benefitted from several initiatives backed by the State and its partners, and by NGOs. Several projects and programs have been conducted there, such as CAMP and CAPAS (establishment of a local facility for outboard engine repairs and a fish sales shop), the Program of Assistance to Artisanal Fisheries (construction of fishing piers) that is backed by the Japanese International Cooperation Agency, with the establishment of a fishing center that includes platforms and a fish processing site. **The stakeholders therefore have good hands-on experience and a considerably high level of awareness that justify the existence of certain management measures which have been initiated and implemented, such as:**

- Limiting captures to three (03) boxes of 15 Kg each per canoe;
- Protecting juveniles and prohibiting fishing in rocky areas during the rainy seasons;
- Refusing to use destructive gill nets;
- Prohibiting coastal longlines in rocky areas to prevent them from catching other nets;
- Cleaning the seabed to remove gillnets that remain there;
- Limiting the fishing effort of purse seines to a certain daily output per boat;
- Observing zero fishing days when there is an abundance of pelagics;
- Prohibiting the processing of juveniles on processing sites.

These initiatives were taken freely by the stakeholders and are implemented in a consensual manner.

To do a proper evaluation of the situation in Cayar, arrangements were made to review the main initiatives that had taken place there:

Cayar fishing complex

The Cayar complex was built with JICA. It comprises two fishing piers, a modern processing site, a storage facility for processed products, miscellaneous equipment, and the premises of the Divisional Service, including a meeting room. Training activities were organized for the EIGs of women fish processors and the officer in charge of the pier (which is well managed), and also for the development of income-generating activities. A fishmeal production unit was set up.

The initiatives that have been taken are significant, important and timely. However, the stakeholders complain they were left out from start and their ideas were not taken into consideration. In their view, this has contributed to several failings and weaknesses, including the use of materials not found in Senegal, the installation of fragile drying racks, sanitation problems, and the non-compliance with food industry standards, such as the sequence of steps and the separation of clean and dirty areas, etc.

Program of Assistance to Artisanal Fisheries in the North Coast

Quay provided by the French Agency for International Cooperation: sanitation problems have also been observed on these quays owing to the failure to involve the actors concerned and the local communities as a whole.

EU program: Fisheries Development and Management Strategy for Senegal
This program has contributed to improve the existing quays, put in place a laboratory for sensory testing, provide a cold storage facility and supply various handling and storage equipment, containers, drying racks, and work wear. It also had a quality manager who supported the stakeholders for two years. However, the shelter that was to be built for women and the platform for receiving products were not delivered, and there were some weaknesses (the drying racks and containers are of poor quality, the cold storage facility is not utilized owing to the high cost of electricity).

FAO assistance for the establishment of a Nioc Ma producing plant

The plant was completed and the women received training, but the project did not continue because there was no support for it to properly market its products.

WWF Initiatives

WWF considered Cayar as a pilot center and carried out several different on-site initiatives on sensitization and training (basic management and accounting, literacy education, hygiene and quality, etc.), marketing and community radio. WWF engaged also in sanitation, education, health, and construction of shelters for women, etc. The beneficiaries were happy with the WWF approach and considered that it was participatory and effective.

Initiative by the Association for Fisheries, Tourism, Environment (APTE)

APTE helped the women fish processors to set up a pilot fish production/processing unit based on the standards of decent work. It delivered an extensive sensitization program, especially on life skills training, good hygiene and processing practices, and basic traceability skills. The initiative also provided support to women fish processors to enable them to market their products. In the same way as WWF, the APTE initiative received applause from the beneficiaries for its efficiency, particularly in terms of training.

USAID COMFISH

The project has a facilitator and a community extension worker on the ground. It has prepared a Memorandum of Understanding (MoU), together with the stakeholders and local communities, to map out the framework and provide the basis for preparing the Local Convention on the Sustainable Management of Fisheries Resources. The approach is inclusive and entails numerous consultations and discussions between USAID/COMFISH and the local stakeholders and communities to factor in their experience, needs and local realities. Some actions have already been taken on the ground to do the marking of the Marine Protected Area, and conduct sensitization and training on climate change. The project is also making efforts to produce and use biogaz in processing fisheries products.

Efforts are being made also to run projects on health, education, environment and fisheries as part of an arrangement for Local cooperation with LORRIENT.

Fatick Region / Foundiougne Division

Foundiougne is one of the four (4) pilot sites of GIRMaC and the area that hosted the first CLPAs. Artisanal fishing and processing of shrimp plays an important social and economic role in the area.

Initiatives

The management initiatives selected for this center deal with shrimp (biological rest period for shrimp) and the removal of “Bombardiers” fishing nets, known for their small meshing sizes.

Implementation

A Local Artisanal Fisheries Committee (CLPA) and a Management Committee have been established. The measures agreed are approved by the CLPA concerned and implemented smoothly. The stakeholders display a strong sense of commitment. With the support of GDRH, one thousand eight hundred (1800) small size mesh nets have been removed and replaced. The local actors are sufficiently aware of the measures that have been taken and they follow them. But problems of non-compliance by fishermen from other communities have been observed, because some community members give such offenders shelter, materials and means of production. Biological rest periods are implemented with observable benefits (extension of the fishing period and qualitative gains in shrimp production), but some dealers who accept to buy small shrimp are making it difficult to sustain this process.

Monitoring-Surveillance

Monitoring is done relatively well and most local fishermen are committed to a successful monitoring process. But there are problems with surveillance, given the size of the area and the fact that members of the surveillance committee are losing motivation as their number decreases (from thirty (30) to nine (9)).

Participatory research

The local stakeholders feel they were left out of CRODT’s research initiative and want research to be participatory and involve them from start to finish, so that they agree on a biological rest period for shrimp.

Way forward

The stakeholders approve of the COMFISH approach. They say that it is participatory, inclusive and surveys local communities to understand them properly. Hence, they want COMFISH to continue sensitizing and training them so that they gain true ownership of the measures agreed and can run the CLPA smoothly. They expect to get support for their monitoring, surveillance and marketing activities, and want also to find a way to get access to the fish processing center built under PAPA SUD.

Dakar Region/Fufuisque Division/Yene, Rufisque, Bargny sites

1. Yene

From the administrative standpoint, Yene is under the Yene Rural Community and the Bambilor sub-division in Rufisque division. Fishing is the main economic activity in these areas and the species harvested are diverse. Fish processing is developing quickly in Yene, where the Yene Dialaw CLPA, covering seven (07) villages, is based.

The stakeholders in Yene are no newcomers to initiatives by the State and its partners. The first artificial reefs immersion project was in Yene.

Management initiatives

It was from the artificial reef immersion project that cooperation with JICA began in 2003. After this first initiative, the next step was to establish a Regulated Fishing Area and an initiative to prevent juvenile sardine captures.

Implementation of initiatives

The artificial reef initiative was a success. In just a year, more species and higher quantities of fish were harvested around the reef. After JICA, the WWF entered the GDRH program for sensitization on habitat restoration, limitation of captures and the setting of three (03) reefs – this last component is still pending. Overall, the local stakeholders' commitment to complying with the measures taken is strong.

Monitoring and surveillance

Although stakeholders are committed, monitoring has been poor because resources for effective surveillance and regular evaluations are lacking.

Way forward and stakeholder expectations

- Under PRAO's initiative, the WWF works with stakeholders to restore habitats and to sensitize and train them on access rights. It also supports fish processors and other efforts to build the Fishers' center.
- The local stakeholders are waiting for the EU initiative on Octopus Reefs and Juvenile Protection that will be part of the Sustainable Fisheries Management in Senegal (ADUPES) project.
- COMFISH takes a participatory approach that truly involves the local stakeholders. It has conducted the baseline study, identified all the management measures with the stakeholders, and helped them adopt the local convention.

The local stakeholders expect COMFISH and the other organs to help them to:

- Rehabilitate the dock landing to improve the sale of fisheries products;
- Continue extension on the Fishing Code so that more people know its provisions;
- Train local actors. Several training initiatives have targeted them, but with their low level of education, they still need retraining;
- Provide resources and equipment for surveillance and safety at sea;
- Prevent sea encroachment and coastal erosion, the two major concerns of fishing communities and fishermen.

2. Rufisque/ Bargny

The Rufisque/Bargny CLPA covers Rufisque, Bargny, Sendou and Miname. Fishing is an important activity on these sites. The local stakeholders have seen several initiatives by the State and its partners, and they are now more experienced in organizing and administering fisheries management.

These stakeholders have been through several training courses (Management, Fishing, Processing), but still need training, particularly in leadership. They complain of not knowing what CLPAs do, and this causes plenty of misunderstanding and conflict. This, and the increasing scarcity of fisheries resources, kept the CLPA from doing good work until mid-2013 when CLPAs were restructured to include an Executive organ and other relevant committees. Now, only the surveillance committee and the conflct resolution committee have the financial resources to discharge their duties properly.

The main management initiative selected is to prohibit juvenile sardinella captures.

Efforts to implement and monitor this initiative are slow because there are no resources for monitoring and surveillance, some stakeholders go against the rules, and some fishmeal manufacturing plants buy and process juveniles. The authorized market size for sardinella (12 cm) needs to increase. Most sardinella catches above 12 cm are considered immature. The use of prohibited fishing nets, the non-biodegradable nylon nets, causes problems in this area and the whole country.

Going forward, COMFISH faces many expectations from the stakeholders. It has taken steps to prepare them and establish a baseline from which they can work towards the Local Convention on Sustainable Resources Management. The demand for funding support is high at this level, as well as the need for sensitization to help stakeholders understand the rules that govern fishing and CLPAs.

Annex 4: Questionnaire/Survey sheet

Name of Structure	
Service/organ in charge of Extension	
Status (institutional framework)	
Human and material resources	
Modes of action/ work methodology	
Terms and methodology for monitoring and evaluation (S § C)	
Px Programs and Actions since inception	
Relations with other Entities	
Evaluation of actions and results	
Needs assessment (institutional framework, human and material resources)	
Remarks / Suggestions	