USAID/COMFISH Project
PENCOO GEJ
(Collaborative Management for a Sustainable Fisheries Future in Senegal)

(LWA Associate Award No. 685-A-00-11-00059-00)

FINAL PERFORMANCE REPORT
February 11, 2011–September 30th, 2016

December 2016

Table Of Contents

ACRONYMS

ANACIM	National Agency of Civil Aviation and Meteorology
CCLME	Canary Current Large Marine Ecosystem
CL	Local Agreement (Convention Local – in French)
CLPA	Local Artisanal Fisheries Councils (Conseils Locaux de Pêche Artisanale)
CNCPM	National Consultative Council on Marine Fisheries
CNGPP	National Committee for Collaborative Management of Small Pelagics
COGEPAS	Senegal artisanal fisheries co-management project (JICA)
COMNACC	National Committee on Adaptation to Climate Change
CRC	Coastal Resources Center
CRODT	Oceanographic Research Center Dakar, Thiaroye
CSE	Ecological Monitoring Center
CSRP	Sub-Regional Fisheries Commission
CST	Scientific and Technical Committee
DAMCP	Department of Community Based Marine Protected Areas
DITP	Department of Fisheries Processing Industries
DPM	Department of Marine Fisheries
DPSP	Department of Fisheries Protection and Surveillance
ECOWAS	Economic Community of West African States
ETT	Technical Working Group (Équipe Technique de Travail)
GIE	Economic Interest Group
GIRMaC	Integrated Marine and Coastal Resources Management Project (Gestion Intégrée des Ressources Marines et Côtières)
GOS	Government of Senegal
GO-WAMER	Governance in the West Africa Marine Eco-Region (European Union)
ICC	CLPA Coordination and Advisory Committee
IRD/IFAN	Refers to the Biological and Ecological Laboratory of Fish in West Africa (Laboratoire de Biologie et d'Ecologie des Poissons en Afrique de l'Ouest - LABEP-AO)
IUPA/UCAD	Institut Universitaire de Pêche et d'Aquaculture - Université Cheikh Anta Diop
IUU	Illegal, Unreported and Unregulated Fishing
LPS	Fisheries and Aquaculture Sector Policy Letter
MEEC	Ministry of Environment and Classified Establishments
MPEM	Ministry of Fisheries and Maritime Economy
PMP	Performance Management Plan
PRAO	West Africa Regional Fisheries Project (Projet Regional des Peches en Afrique de l'Ouest)
PSMA	Port State Measures Agreement
SMU	Sustainable Management Unit
URI	University of Rhode Island
USAID	United States Agency for International Development

1. EXECUTIVE SUMMARY

The USAID/COMFISH Project was a 5 year, 7 month initiative (February 11, 2011 - September 30, 2016) funded by the United States Agency for International Development (USAID). The project was implemented through a Cooperative Agreement between USAID and the University of Rhode Island (URI)/Coastal Resources Center (CRC). Implementing and strategic partners included national and local government agencies, Local Artisanal Fishing Councils (CLPAs), fisheries associations, university centers, research institutes, and non-governmental organizations (NGOs) working on marine capture fisheries and other related cross-cutting issues along the coast of Senegal.

This is the Final Performance Report of the USAID/COMFISH project. The contents follow the guidance provided by the Associate Agreement for this project between URI/CRC and USAID/Senegal. That guidance called for:

- An overall description of the recipient's activities and attainment of results during the life of the Agreement
- An assessment of progress made towards accomplishing the objective and illustrative results
- Significance of these activities
- Success stories
- Comments and recommendations
- A final report that describes how the recipient's funds were used

The objective of USAID/COMFISH was to support the Ministry of Fisheries and Maritime Economy through its technical directorates, particularly the Maritime Fisheries Directorate (DPM), in its efforts to achieve reform in the fisheries sector as stated in the former Fisheries Sector Policy Letter (LSP) and reaffirmed in the new "Lettre de Politique Sectorielle et de Développement de la Pêche et de l'Aquaculture (LPSD/PA) of 2015. USAID/COMFISH also had the objectives of promoting biodiversity conservation, fisheries sector sustainable livelihoods, gender equity and adaptation to the impacts of climate change.

The project strategy was to strengthen the enabling conditions necessary for improved governance including creating strong constituencies and ownership for sustainable fisheries management, individual and institutional capacity development, integration of scientific information into decision making, and participatory and inclusive planning and implementation in fisheries.

The project put in place participatory fisheries co-management plans for two priority stocks (Sardinella and Ethmalosa) based on the concept of ecosystem scale fisheries co-management, and using Local Artisanal Fisheries Councils as the co-management entry point from an institutional point of view. These two fish stocks account for over 80 percent of the total volume of marine fisheries catch by the artisanal fishery (which represents about 90% of total industrial and artisanal marine catch). The aim was to integrate institutional, administrative, socio-economic and environmental aspects in the process of establishing sustainable co-management of fish resources in Senegal based on the ecosystem approach. The goal of all the activities was also to increase the resilience of marine and coastal ecosystems and populations to the effects of climate change through appropriate and effective adaptation strategies.

One of the innovations of the project was the application of a unifying paradigm: the Sustainable Management Unit (SMU) concept that was accepted by the Maritime Fisheries

Directorate (DPM). SMU is a concept that aims to combine local co-management structures (CLPAs and other local fisheries committees) and stocks in such a way that the fishing capacity and effort that have an impact on the stock are quantitatively harmonized with the productive capacity of each stock.

The key stocks on which the USAID/COMFISH project worked were identified through a consultative and participatory process involving CLPAs at the intervention sites, the central fisheries administration, the decentralized services of the Ministry of Fisheries, associations of fishery professionals, universities, and representatives of other projects and donors involved in the fisheries sector. This process made it possible to validate the choice of the stocks targeted by the project (Sardinella and Ethmalosa) during a national workshop that brought together all the main players in the fishery. The other stocks identified as important at the workshop, but lesser priorities for USAID/COMFISH, are Grouper (epinephelus), coastal shrimp (penaeus notialis), Octopus (octopus vulgaris).

Five participatory, ecosystem-based management plans for Sardinella were prepared, validated by CLPA fisheries actors and approved by the Minister of Fisheries and Maritime Economy. A draft Ethmalosa management plan was also prepared but not formally validated by CLPA fisheries actors or approved by the Minister due to time constraints of the project ending. These contributed to implementation of the National Small Pelagic Management Plan.

Other key actions at the political level included support for the process of elaboration of the new Sector Policy Letter (LPSD/PA); Ministerial approvals of a national climate change adaptation plan for fisheries; approval and implementation of 6 CLPA based climate change adaptation plans; preparation and implementation of a national Gender Strategy including a Declaration on Women in Fisheries and Action Plan; contributions to the fight against IUU fishing at both the industrial and artisanal levels; support to the Technical Committee for reflection on the management of fishing capacity in terms of organizing meetings of this committee and capacity building; assessment of fishing outside Senegal's exclusive economic zone (EEZ) and inclusion of such fishing data in national statistics; support for the Government of Senegal’s Accelerated Growth Strategy (ACS); support to the implementation of the action plan of the National Strategy for Marine Protected Areas through the Department of Community Based Marine Protected Areas (DAMPC); pilot testing of a program in 4 CLPAs to provide health and boat insurance to fishers; and, the establishment and implementation of a national program to improve marine weather information and alerts to reduce accidents at sea.

The capacities of institutions and actors were strengthened at all levels to provide them with tools, approaches and knowledge to enable them to contribute effectively to reform in the fisheries sector and to change behavior in favor of sustainable co-management of fisheries resources in Senegal. Capacity building included key national fisheries research institutions. It enabled fisheries research institutions such as CRODT, IUPA, CSE and IRD/IFAN, among others, to expand their research activities to areas otherwise not well covered and to train young researchers and doctoral students. It also resulted in improved coordination and collaboration across fisheries technical and research institutions. Studies on Illegal, Unreported, and Unregulated (IUU) fishing provided impetus to the 2013 National Strategy to Combat IUU and the IUU Action Plan.

Co-management capacity development was achieved at a much greater level than initially anticipated. The geographic scope of the project was expanded to include St. Louis in the north and Casamance in the south. In the end 21 CLPAs (Sindia Sud, Sindia Nord, Mbour, Joal-

Fadiouth, Cayar, Rufisque-Bargny, Yenne/Dialao, Pikine, Yoff, Hann, Saint Louis, Ziguinchor, Kafountine, Elinkine, Lompoul and Potou , Gandiole, Djirnda, Bassoul, Niodior, Missirah, Toubacouta, Fimela, Niassia, Kalissaye, Abene, Tiobon, Thionkessyl, Mangagoulack, Cap Skiring and Oukout) had their organizational structures developed into a framework for exchange and consultation on fisheries management. CLPA institutional and stakeholder capacity were also strengthened through the retrofitting and equipping of offices and meeting spaces; training and extensive application in the use of locally selected "relays" to communicate, motivate, and organize CLPA activities; capacity building of volunteer fisheries monitoring groups and CLPA self-surveillance at sea; strengthening and behavior change in administrative and financial management; internal mobilization of funds; and training in organization and community dynamics (ODC) and resource management.

In addition, local authorities located in the project areas have received significant support (through studies and meetings) enabling them to better understand the importance of fishing in their area, with a view to contributing to the financing of CLPAs.

Women's capacities in post-harvest fish processing and conservation of fishery products have also been strengthened through improved hygiene and sanitation practices supported by locally developed and implemented hygiene Charters (in 15 locations), and through the establishment of a modern processing unit in Cayar.

The establishment of the SMUs for priority species and the integration of climate change in this process were supported by efforts dedicated to strengthening the scientific basis for sustainable fisheries management and a better understanding of the concept of climate change and its effects on marine ecosystems and communities. The project carried out a series of biological, spatial, and socio-economic studies and analyzes with five key partners (CRODT, IUPA, CSE, University of British Colombia and IRD/IFAN) to support the process of setting up participatory fisheries co-management plans. More than 41 technical studies were completed. All the spatial information is contained in a Geographical Information System (GIS) created by CSE to support improved management of fish resources at all levels (see http//www.sig-comfish.net).

The strategy to build CLPA fisheries co-management capacity involved the development and formal approval of Local Agreements, or CLPA legal ordinances on marine resource management, surveillance, and enforcement. Their development (9 of them in Joal-Fadiouth, Mbour, Sindia north, Sindia Sud, Ziguinchor, Kafountine, Cayar, Yenne/Dialaw and Rufisque/Bargny) was grounded on a 15 step participatory process established by the project; they are now being implemented.

The use of Local Agreements in maritime fisheries was an innovation of the USAID/COMFISH project, the development and implementation of which enabled the reorganization and the operationalization of the CLPAs. These initiatives have also been regularly evaluated internally in order not only to assess challenges and effectiveness in the implementation of the Local Agreement rules but also to identify the activities that will feed into the annual action plans of the CLPAs. This process included training over 13,775 people (34% women) through 596 training workshops on administrative and financial management, hygiene and sanitation, participatory surveillance, safety at sea, use of meteorological data, adaptation to climate change, and good fishing practices. More than 42,837 people have been involved in the implementation and application of new technologies, strategies and tools developed by the project in the intervention sites.

In the area of conservation, the project focused on Marine Protected Areas. In collaboration with the Ministry of the Environment and Classified Establishments (DEEC) through its technical Directorates, the project supported actions related to extension and implementation of the National Strategy on MPAs, defining the boundary of the MPAs of Cayar and Joal-Fadiouth, setting up governing bodies of the MPAs in Gandoul and Sangomar, and capacity building of the MPA management committees in Cayar and Joal.

In the field of climate change the project assisted the Ministry of Fisheries and Maritime Economy to better integrate climate change into the national planning process and in local planning. Outcomes and outputs included: 1) the preparation of the National Adaptation Plan (NAP) for the fisheries sector with a vision to 2035. This is the first sectoral adaptation plan to contribute to Senegal's National Climate Change Adaptation Plan. It was officially signed by the Ministers of Fisheries and of Environment in October 2016 and was showcased at the Climate Change Conference of the Parties (COP) in Morocco in October 2016; 2) six vulnerability assessments of local communities followed by six local adaptation plans, formally approved and in the process of implementation; and 3) 10 scientific studies to accompany the whole process. More than 5,510 people were trained (39% women) in climate change.

A Climate Change Fisheries Platform, under the leadership of COMNACC, was established to oversee the entire NAP/fishery process. Actions taken in the implementation of local adaptation plans included, among others, the establishment of the National Weather Alert Platform to improve the resilience of coastal communities, the implementation of a fisheries insurance scheme, and the establishment of health committees and Charters at 15 artisanal processing sites. The weather alert program led to the creation of local guidelines and rules, such as a national guideline on color codes of warning flags (e.g. green, yellow, red, etc.) related to wind and sea conditions; penalties for not following weather condition guidance of sea safety; and, SMS distribution of weather conditions. Anecdotal reports from fishermen indicate that fishing boat losses, and fishermen injuries and fatalities were reduced with the start of the Weather Alert Platform.

Socio-economic activities for the benefit of women processors were carried out with the aim of improving their working conditions and increasing revenues from their activities. They included a capacity-building program (functional literacy courses, climate change training, hygiene and sanitation, leadership training, marketing, and improved production, storage, packaging and labeling practices); developing and implementing Code of Conduct Charters; establishing health committees; exchanges with other USAID projects; trade shows; and revolving credit programs. The project trained more than 4,700 women in the fish processing value chain in 15 processing sites.

The socio-economic benefits of the Cayar model facility and process to develop it are very tangible in terms of the demand and market for the fish products, and organization and strength of the women processing group. The Cayar artisanal processing unit is the first to be approved in Senegal by the Department of Fisheries Processing Industries (DITP) for the export of its products to the European Union. Price per unit weight of Cayar packaged fish products increased three-fold with improved product quality, packaging and establishment of the Cayar product label, selling at 1000 FCFA/kg (about $1.81/kg) compared to 300 FCFA/kg (about $0.55/kg) for non-improved product at the same site.

The Cayar women's processing group was awarded the Francophone Prize in Climate Change (awarded by the International Francophone Organization) at the Climate Change COP 22 in

Marrakech, Morocco. The award provides a grant of 17 million FCFA (about US $30,000) for further support to women processing groups and climate change adaptation.

In terms of communication and outreach, the project enabled 576 community radio programs and 279 written and audiovisual productions (videos, brochures, manuals and guides on the implementation of different strategies), including a video in Wolof subtitled in French and English of the major results of the project.

Figure 1. Community radio program

2. ACTIVITIES AND RESULTS

2.1 IR1: Institutional and stakeholder capacity strengthened at all levels to implement an ecosystem based, co-management approach towards sustainable fisheries, taking into account climate change impacts in the fisheries sector

2.1.1 CLPA institutional capacity building

A major activity throughout the duration of USAID/COMFISH was to support increased CLPA institutional capacity. The main objective of CLPAs is to bring all stakeholders together for sustainable fisheries resources management. The CLPA is the institution that makes it possible for effective collaborative fisheries resources management. At the start of USAID/COMFISH the vast majority of CLPAs were non-operational (lack of technical, institutional and financial resources).

The 1998 Fishing Code and updates of the Code (Article 23, 2015) set out the provisions for establishing legal and institutional frameworks for collaborative fisheries co-management in Senegal through CLPAs. The structure and location of CLPAs were defined by Ministerial decree. CLPAs are apolitical, non-profit professional organizations of artisanal fishermen and other fisheries stakeholders. They are empowered to play a local governance role, set and apply rules, and convene all actors for collaborative management of fisheries resources and timely resolution of conflicts.

USAID/COMFISH used the CLPA as the institutional entry point for fisheries co-management and Local Agreements as a legal tool for negotiating rules at the CLPA level and for developing and implementing collaborative fisheries management plans on selected fish stocks.

Structuring CLPAs and revitalizing them through meetings of the members of Coordination and Advisory Committee (ICC) have been the project's key areas for strengthening capacity for co-management. Twenty-one CLPAs out of 39 were restructured and transformed (Sindia Sud, Sindia Nord, Mbour, Joal-Fadiouth, Cayar, Rufisque-Bargny, Yenne/Dialao, Pikine, Yoff, Hann, Saint Louis, Ziguinchor, Kafountine, Elinkine, Lompoul and Potou, Gandiole, Djirnda, Bassoul, Niodior, Missirah, Toubacouta, Fimela, Niassia, Kalissaye, Abene, Tiobon, Thionkessyl, Mangagoulack, Cap Skiring and Oukout). The project also renovated workspace and provided equipment for CLPAs to enable their Coordination Committee to function more effectively.

The CLPA Coordination Committee is the primary forum for fisheries consultation. Each ICC includes representatives of all fisheries stakeholders (administrative authorities, technical services, fishers, and the fishing trade). The project worked with this body to organize a series of meetings between actors before developing consensual Local Agreements. The Department of Fisheries expressed great appreciation for these Agreements because of the impact they are making on fishermen's' behavior change towards good fishing practices that contribute to sustainable management of Senegal's fisheries resources.

Other CLPA capacity development activities included technical assistance to train the CLPA Executive Bureau as well as the Coordination and Advisory Committee to understand their roles and responsibilities. Under the Executive Bureau, five Technical Committees were established by the project and provided with training in each CLPA. The five Technical Committees are:

- Resource and environmental management committee
- Training, outreach and organization committee
- Finance committee
- Sea safety and surveillance committee
- Conflict prevention, settlement and external relations committee

The Finance Committee is critical in bringing the CLPA to a situation in which it is self-financing and sustainable in the long-term in terms of funding its operations. In four CLPAs partnering with USAID/COMFISH (Mbour, Joal, Kafountine, Sindia Nord), systems for self-finance were developed, implemented and monitored. The process was a success as the CLPAs where the initiative was piloted implemented the systems with the opening of bank accounts and initial generation of token amounts of funding. Financial resources come from fines for offenses committed, in accordance with the rules of the Local Agreements and from other external and internal sources (e.g. member fees, sale of professional business cards, etc.). The fines and penalties are levied in compliance with the Fishing Code. The project demonstrated to stakeholders at the CLPA level the potential for self-financing and how they could improve and scale up the initiative.

Capacity building of the Sea safety and surveillance committees was conducted in collaboration with the Directorate of Fisheries Protection and Surveillance (DPSP) for the fight against illegal fishing at the local level. The topics covered in the training of the surveillance committees related to participatory surveillance techniques, types of fishing offenses, inspection techniques

and monitoring tools and procedures. A manual was elaborated at the end of training for the members of the Sea Safety and Surveillance Committees and surveillance team members were provided with equipped boats, badges, and outfits. Support was also provided for fuel for surveillance excursions. Approximately 321 outings were supported. In these outings, 3,344 pirogues were inspected and 364 boat boardings were carried out. This is important because it demonstrates:

- Collaboration between the administration and the actors on implementation of fisheries management rules: (fishing code, local agreements, etc.);
- Participatory monitoring committees of the CLPAs revitalized under Local Agreements, are functional and can support the administration in their supervisory functions;
- Sharing and transfer of some of the central power to fisheries actors has become a reality and this contributes effectively to the fight against illegal fishing at the local level.

Figure 2. surveillance team preparing to go to sea

CLPA Support Fund. The CLPA Support Fund is the mechanism set up by the State to finance CLPA activities. It is supplied through fees on fishing licenses and on fishers' cards but also on subsidies granted by the State. For the management of this fund, a departmental committee was set up presided over by the territorial authority (prefect of the department). In view of the many difficulties faced by CLPAs in implementing the Support Fund, the USAID/COMFISH project supported, in 2016, the organization of two workshops (Ziguinchor and Dakar) for exchange between CLPA members, local authorities, the central fisheries administration and public administration of the treasury. The objective of these workshops was to enable key actors to understand how the Support Fund should function.

Discussions centered on fees for fishing licenses, fishers' cards at the various localities, the weak involvement of the administrative authorities in the procedures, and the cumbersome procedures for disbursement of Support Fund grants. Numerous recommendations and proposals were formulated to improve the operation of the Support Fund.

Annual CLPA evaluation meetings and action planning. The project also assisted the ICC Committees to organize annual evaluation meetings (on technical and organizational issues) with resource persons and partners. At the annual meetings, CLPA action plans and monitoring

of performance are discussed. The action plans are revised annually and submitted to different financial and technical fisheries partners.

2.1.2 Establishment of Local Agreements

It was with the aim of turning CLPAs into operational units for the purpose of collaborative fisheries management on an ecosystem scale that the process for establishing and approving Local Agreements was part of the CLPA institutional capacity development strategy from the beginning. They are a legal tool for negotiating resource management rules in localities between resource users and stakeholders. CLPAs can establish Local Agreements using the provisions in the 1998 Fisheries Code and the 2015 update of the Code.

CL development begins with a request and show of interest by stakeholders willing to change their fishing behavior and avoid poor fishing practices in their areas. As pioneered by USAID/COMFISH, there are 15 steps in the process of formulating and implementing Local Agreements:

Step 1: Inform and raise awareness of stakeholders (CLPA, local authorities) about what a Local Agreement is: a tool for management of the fisheries

Step 2: Sign MOU between USAID/COMFISH and the CLPA for working on a Local Agreement together

Step 3: Select and train local coordinators, or "relays" who are designated by the CLPA to facilitate the development and implementation of the Local Agreement

Step 4: Prepare with the CLPA officers an action plan for the formulation of the Local Agreement

Step 5: Train the relays and have them assess fisheries resources management and prepare a diagnostic report (fisheries potential; census of stakeholders, fishing boats and engines; artisanal processing techniques; identification of existing rules; and current management initiatives in the CLPA)

Step 6: Participatory (local knowledge) mapping of the fisheries (location of stocks, key habitats, spawning and nursery areas) and the coastal area (infrastructure related to fisheries, landing sites, processing sites, roads, ports, etc.)

Step 7: Organize focus group discussions (FGD) with stakeholders to set rules for the fishery based on constraints (information on exploited resources; traditional forms of management; current management measures; existing surveillance and enforcement)

Step 8: Following inputs from the FGDs hold meeting(s) with the CLPA ICC for validation of the findings and recommendations for fishery rules of exploitation

Step 9: Prepare with CLPA key actors the Local Agreement document pulling together the maps, state of the fishery, and proposed fishery rules

Step 10: Organize a technical workshop for validation of the Local Agreement with local authorities (DoF, Coast Guard, Marine Police, CLPA, and other local key actors)

Step 11: Urge the CLPA and local administrative authority to approve the Local Agreement

Step 12: Conduct outreach and disseminate the Local Agreement (disseminate copies, organize outreach meetings at villages and landing sites, make use of local radio stations)

Step 13: Establish fisheries surveillance (in the case of CLPA this is through the Commission of Surveillance in coordination and support of DoF surveillance and other relevant government agencies)

Step 14: Capacity strengthening of various components of responsibility of the CLPA for sustainable operations of the CLPA to implement the Local Agreement (such as training in surveillance, administrative and financial training to operate effectively, etc.)

Step 15: Prepare an annual work plan for implementation of the Local Agreement

This process was completed and formal approval of Local Agreements was achieved in the 9 CLPAs where it was introduced. The Local Agreement process was successful because of the value added it brought to stakeholders at all levels. The process has: enabled all stakeholders (administration and actors) to understand their respective roles and responsibilities in the CLPA; allowed all actors including the administration to better understand the composition and operating rules of the CLPA and served to popularize the rules governing the functioning and composition of the CLPA; allowed the actors to have a trained relay (a trusted interlocutor) who could help them to better express their points of view in resource management in their localities; allowed the actors to integrate their local knowledge into the data collection process and the administration to have statistical and cartographic data on fishing areas at the local level, improving fisheries statistics at all levels which will contribute to better fisheries management; helped to facilitate political dialogue, scientific collaboration and build trust between the actors and the administration.

Local Agreements contributed to the emergence of the CLPA and allowed CLPAs that benefited from this process to become functional. By the end of the project, the Local Agreement process was in demand by CLPAs that did not have a CL. CLPAs that existed only by name, as well as the administration, appealed to the project to help them develop a CL for the operationalization of their CLPA. In areas such as the Casamance, where stakeholders had not imagined the CLPA could play such an important role in local resource management, they requested installation of the 11 CLPAs envisioned by the administration. This demonstrated demand by actors and the administration for scale up of the CL process indicates that sustainability in the 9 CLPAs where CLs exist and eventual completion of the process in all 39 CLPAs could be successfully achieved if resources were committed to doing it.

2.1.3 National consultative forums and committees

A Technical Working Team (ETT) was set up by DPM by memorandum No. 00556 MPAM/DPM/SK of 03 April 2013. This ETT was chaired by the Deputy Director of Fisheries and consists of DPM technicians, fishery inspectors in the project areas, USAID/COMFISH project experts and any other expertise that can provide expertise in fisheries management. It was responsible for validating the reports produced periodically by the USAID/COMFISH Project as part of the development of fisheries management plans targeted by the project, as well as the implementation of Local Agreements developed for the implementation of fisheries co-management. The ETT provided a model for participatory development of management

plans for Sardinella and Ethmalosa fisheries that could be replicated in the development of other species management plans.

USAID/COMFISH also facilitated the establishment of a National Technical Committee on the management of fishing capacity in Senegal. A meeting was held in April 2013 to share the recommendations of a workshop on the management of fishing capacity and illegal fishing. The Minister of Fisheries and Maritime Economy, by official notification, then established the Capacity Management Committee by "Memorandum No. 000822" dated 12 June 2013. This memorandum defines the participating institutions and TOR assigned to this Committee. The Committee was charged with the task of examining and proposing to the Minister mechanisms to improve the management of fisheries in the Senegalese EEZ. This Committee, led by the DPM, had the participation of all the national structures and local fisheries actors, fishermen's organizations, fisheries value chain traders, and other fisheries partner projects of the Ministry.

The National Technical Committee held meetings and discussed the validation of documents developed under USAID/COMFISH that included reports on IUU industrial fishing in the Senegal EEZ and the landings of artisanal fisheries outside the Senegalese EEZ completed with CRODT. These studies enabled the Ministry of Fisheries to have data enabling it to quantify the exploitation status of Senegalese fishery resources. The information was integrated into the fisheries management plan development process led by the USAID/COMFISH project.

USAID/COMFISH also supported the process of elaboration of the new Sectorial Policy Letter of for the Development of Fisheries and Aquaculture (through the Unit of Studies and Planning). The project supported the process of drafting the new Sector Policy Letter and participated in the "National Workshop on Restitution and Validation of the Draft Final Report on the Review of the Implementation of the Letter Sector Policy and Aquaculture", with a view to formulating a new Sectoral Policy Letter for the sector over the period 2016-2023.

In climate change, USAID/COMFISH facilitated the establishment of a national Steering Committee on the integration of climate change into fisheries policy, resulting in a National Climate Change Adaptation Plan and Vision in Fisheries to 2035. The project also catalyzed meetings and discussions on fisheries with the National Committee on Adaptation to Climate Change (COMNACC). The fisheries National Adaptation Plan (NAP) is the first sector wide NAP to be developed in Senegal and stands as a model for other sectors as COMNACC facilitates an integrated cross-sectoral NAP process.

Finally, the project interacted with the National Management Committee on Small Pelagics to participate in and help organize meetings of the Committee on national Sardinella management planning. This activity contributed to making this body more functional in the process of establishing small pelagic management plans, in particular for Sardinella and Ethmalosa.

2.1.4 Gender equity and empowerment

In the first 2 years of the project, USAID/COMFISH facilitated the preparation of a national Declaration on women in fisheries, developed a fisheries sector capacity building strategy for women in fisheries, and facilitated an Action Plan that was adopted and signed by DPM and other project partners.

Other activities included:

- Taking steps to increase the participation and voice of women in CLPA meetings to develop and implement Local Agreements, build CLPA organizational capacity, and formulate fishery management plans
- Working with women in fisheries through women's fish processing groups to support education, training in record keeping, leadership skill building, literacy training, development of Charters that include sustainable fisheries good practices (no purchase and processing of juvenile fish or illegally caught fish), sanitation and hygiene improvements, and improved processing techniques, packaging, storage and marketing

Figure 3. Literacy training of women fish processers

Cleaning equipment was also provided for the actors; this responded to an old complaint of the women who have always raised the problem of hygiene and sanitation at processing sites. The material given to the women consisted of shovels, rakes, trash containers, masks, etc. Drying racks were also distributed at the processing sites of Nianing, Mballing, Tann, Khelcom, Ndayane, Yenne and Rufisque/Bargny in order to better implement the measures of Local Agreements related to good practices in artisanal processing.

2.1.5 Donor coordination and synergies

Coordination with other donor efforts and building synergies was an important activity of USAID/COMFISH throughout the life of project. Key partners in this respect were the World Bank, CRSP, JICA, CCLME, and the EU.

The World Bank supported two initiatives in Senegal on fisheries: a) Integrated Marine and Coastal Resources Management Project (Gestion Intégrée des Ressources Marines et Côtières – GIRMaC), which ended in 2012, and b) the Senegal country component of the West Africa Regional Fisheries Project (Projet Regional des Peches en Afrique de l'Ouest PRAO-Senegal). The mission of PRAO-Senegal is to strengthen Senegal's capacity in the areas of good fisheries governance, the fight against illegal fishing (IUU fishing) and increased value added of fisheries products. Synergies with the USAID/COMFISH project included:

- Capitalize and build on PRAO-Senegal actions in the fight against IUU fishing by supporting implementation of the National Plan to address IUU Fishing developed with PRAO support.

- In the field of local co-management of artisanal fisheries, help the PRAO to better establish the link between Local Fisheries Committees (CLP) and the CLPAs, which the administration has now clearly identified as the local governance structure of reference for artisanal fisheries, and continue to educate and train stakeholders in actions for sustainable co-management.
- Continue to capitalize on and disseminate the actions undertaken by PRAO in the management of access to artisanal fisheries (application of fishing licenses).

The World Bank PRAO program was designed to have both regional and individual country components, with initial focus on four countries: Cape Verde, Liberia, Sierra Leone, and Senegal. PRAO began full operations in 2013. The Bank is currently in an evaluation and preparatory phase for a PRAO Phase II that will extend the geographic reach of the program.

The Sub-Regional Fisheries Commission (CSRP) is an intergovernmental organization established in 1985 through Convention, and includes seven member states: Cape Verde, Gambia, Guinea, Guinea Bissau, Mauritania, Senegal, and Sierra Leone. The CSRP focuses on marine fisheries of the Canary Current LME, and its objective is to strengthen cooperation and coordination of the policies of member states.

CRSP has implemented the project "Towards Regional Policies of Small Pelagics in Northwest Africa" commonly called the "Small Pelagics Project" since 2007. It aims to strengthen the instruments of sub-regional cooperation and coordination for the management of shared stocks between countries under major influence of the Canary Current upwelling system: The Gambia, Morocco, Mauritania and Senegal. The project was supported by the French Development Agency (AFD), the Africa, Caribbean, Pacific program (ACP), and the Ministerial Conference on Fisheries cooperation among African States Bordering the Atlantic Ocean.

Certain synergies were also developed with CSRP and the FAO (United Nations Food and Agriculture Organization) in the context of implementation of the CCLME (Canary Current Large Marine Ecosystem) project on small pelagics. The USAID/COMFISH project supported interactions with these programs at the national and local level as part of its contribution to the development of local participatory management plans for Sardinella in Senegal.

The development and implementation of collaborative management plans of Ethmalosa also involve synergies with the institutions that currently work on Ethmalosa at the West Africa regional level, especially the European Union (EU), which funds (10.5 million Euros) the "Governance of marine resources management policies and poverty reduction in the West African Marine Ecoregion" project (GO-WAMER), which is coordinated by the United Nations Development Program (UNDP). GO-WAMER has a partnership agreement with CSRP on Ethmalosa management planning in Senegal.

The GO-WAMER program also has a partnership agreement with CSRP and WWF focused on combatting IUU fishing and is responsible for coordinating and funding development of Senegal's National Adaptation Plan for Climate Change. USAID/COMFISH coordinated with the CSRP, the GO-WAMER project and UNDP in the coordination of actions related to:

- Combatting IUU fishing
- Development and implementation of small pelagic management plans (Ethmalosa and Sardinella)

- Development and implementation of the National Adaptation Plan for Climate Change in the fisheries sector

The Japanese International Cooperation Agency (JICA) supported the Senegal artisanal fisheries co-management project (COGEPAS) from 2009-2013 with a focus on support to co-management structures (CLPAs), encouraging private sector involvement in sustainable management of the sector, and implementing fisheries management activities with artisanal fishermen in the fishing villages of Lompoul, Cayar, Joal, Djiffer, Nianing and Pointe Sarène. It resulted in awareness raising at the level of the fishermen and provided an opportunity to reflect on how to compensate the losses experienced by fishermen during the biological rest periods through income-generating activities such as setting up a fishmeal plant in Cayar. The USAID/COMFISH Project co-supported elements of COGEPAS that overlapped with USAID/COMFISH's objectives, and capitalized on and disseminated the results of the COGEPAS Project at other fisheries sites in Senegal. It is within this framework that the project supported immersion of octopus pots during the biological rest period (identified in a participatory manner with all stakeholders including the administration and scientists), throughout the department of Mbour to support implementation the management plan for this species put in place by GOGEPAS. The project also continued the process of regionalization of fisheries resource management initiated by COGESPAS in the maritime region of Thiès through establishment of CLPA networks, which will contribute in the long term to the establishment of sustainable management units for targeted stocks (Octopus, Sardinella, and Ethmalosa).

2.1.6 IR1: PMP Results

- 9 CLPA Local Agreements approved and implemented in CLPAs
- 21 CLPAs restructured and with improved institutional capacity
- 15,474 individuals (31% women) trained in fisheries good practices and fisheries governance through 596 training workshops
- 279 audio and written productions (radios shows, brochures, videos) prepared and distributed for capacity building of co-management institutions and fisheries actors
- 549 research and educational organizations, government agencies, and NGOs with strengthened capacity
- 21 lines of synergies created in the process of establishing Sustainable Management Units

2.2 IR2: Vulnerability assessed and national/local institutional capacity strengthened to adapt to the impacts of climate variability and change

The impacts of climate change affect sustainable fisheries management in Senegal. Addressing the challenges associated with climate change at all levels and in all natural resource management processes is vital. This is why the USAID/COMFISH project established a set of processes to strengthen capacity for institutions and actors so that they improve their resilience to the impacts of climate change. This includes interventions at the policy level to increase the emphasis on climate change, support for coastal and local communities to implement the

national strategy for adaptation to climate change, and generating scientific knowledge to support decision making and the development of action plans.

Figure 4. Beach erosion in fishing community

2.2.1 Elaboration of a national climate change adaptation plan in fisheries

After a first meeting to establish contact with all the entities involved (administrators, researchers and development partners), discussions were held with DPM, DEEC, COMNACC (National Committee on Adaptation to Climate Change), CSE, CRODT and ANACIM. With the support of the project, a Steering Committee was set up in May 2013 to create the enabling conditions for dialogue on ways to better address climate change in policies. This Steering Committee conducted a diagnostic study of the consultation frameworks already in place on these aspects and presented the results to all stakeholders at the national level (February 2014) after these were validated by COMNACC's Vulnerability and Adaptation Group (July 2014).

This dialogue involved all the stakeholders and made it possible for them to place more emphasis on climate change in sectoral policies by developing and implementing a national adaptation plan (NAP) for fisheries. The project continued also to support the NAP process through technical consultations, and by strengthening synergies between DPM and DEEC, as evidenced by the official launch of the NAP on Fisheries that took place in September 2015.

2.2.2 Strengthening capacity for actors and institutions to better address climate change

The capacities of the technical services of the Ministry of Fisheries, Ministry of Environment and Sustainable Development, COMRECC, ICC members from 15 CLPAs, and women fish processors have all received training on the concepts of climate change, its manifestations, its impacts on livelihoods, habitats and natural resources, the enabling factors and identification of sustainable adaptation strategies. A total of 142 training and awareness-raising workshops were sponsored by the project to help institutions and stakeholders better understand the

potential effects of climate change in order to integrate climate change considerations into planning processes at all levels of fisheries management.

Between 2014 and 2016, the project also contributed significantly to strengthen institutional capacity for ANACIM (National Agency for Civil Aviation and Meteorology), providing equipment for transmission of weather alerts, as well as funding to establish a national platform for the transmission of early warnings to artisanal fishermen to ensure their safety at sea during extreme weather conditions. A total of 44,430 alerts were broadcast since the system was initiated. In the short term, this capability aims to reduce the risk of accidents at sea from adverse long term weather and ocean phenomena. Strategic partnerships were also developed with SONATEL-Multimédia (public-private partnership) and with the USAID/CINSERE Project, whose activities revolve largely on strengthening and upgrading climate information services. At the same time, the project has been supporting ANACIM to train local stakeholders on weather forecasts, how to use weather information, and ways of getting weather information to enhance the safety of fishermen and boats in the context of climate change. Fisheries actors are enthusiastic and engaged in using and improving this system that was established and demonstrated with project support. Demand for its' continuation from fisheries actors and the administration is strong. Effective strategies to help stakeholders take charge themselves of the costs of such a system for the long term need to be further developed for its' sustainability.

2.2.3 CLPA vulnerability assessments and adaptation plans

Efforts to assess the vulnerability of coastal communities and plan adaptation strategies were undertaken in seven project areas, including the CLPAs in Saint Louis, Ziguinchor and Kafountine.

Below is a summary of the results achieved in implementing these activities:

- Vulnerability to climate change assessed in six coastal and fishing communities, and six local plans for adaptation to climate change developed, approved, and implemented: (Joal/Fadjiouth, Rufisque/Bargny, Sindia Nord, Sindia Sud, St. Louis, and Ziguinchor Kafountine)
- 16,129 stakeholders in coastal areas are better prepared to address climate change and develop adaptation strategies
- Hygiene committees and Charters established in artisanal processing areas to improve the resilience of women processors to climate change by enhancing the quality of products
- Local actors have better access to marine weather forecasts, and use weather information to enhance safety at sea for fishermen and boats within the context of climate change and climate variability
- Extension activities conducted on good fishing practices, indigenous knowledge, training of radio journalists and project facilitators to improve the resilience of coastal communities to climate change

2.2.4 Promotion of renewable energy

A workshop on renewable energy/climate change was held in Cayar that enabled the actors to reflect on the types of renewable energy that can be promoted in modern artisanal fish processing facilities to reduce costs and protect the environment. During this training, the emphasis was placed on understanding the phenomenon of climate change and its impacts on the fisheries value chain, and also on mitigation and adaptation activities. Two sources of

energy were explored in terms of mitigation: biogas and wind energy. In following up on these ideas with the municipality of Cayar and the National Renewable Energy Agency (ANER), solar energy emerged as a more promising opportunity due to the greater potential for processors to master use of existing technologies and their affordability.

2.2.5 IR2: PMP Results

- The project documented 5,510 individuals trained in climate change and climate change adaptation (39% women). The number of stakeholders with increased capacity to adapt to the impacts of climate variability and change was 16,129 (30% women), and the number of institutions that have strengthened their capacity to adapt to the impacts of climate variability and change was 492.

- Six climate change vulnerability assessments were conducted at the CLPA level, and six plans for adaptation to climate change developed, approved, and implemented: (Joal/Fadjiouth, Rufisque/Bargny, Sindia Nord, Sindia Sud, St. Louis, and Ziguinchor Kafountine)

- National Climate Change Adaptation Plan for Fisheries elaborated, validated, and approved by Ministerial signatures. The Plan with a vision out to 2035 was validated in a national meeting held on July 22, 2016 in Dakar. It was signed and approved on November 3, 2016

- USAID/COMFISH and DPM presentation of Senegal fisheries adaptation plan at the October 2016 Climate Change Conference of the Parties in Marrakech, Morocco.

- The number of laws, policies, strategies, plans, agreements, or regulations addressing climate change adaptation and/or biodiversity conservation officially proposed, adopted, or implemented was documented at 29. These include fish processing hygiene Charters (adopted at 15 processing sites), climate change adaptation plans, Local Agreements, and fisheries management plans.

Figure 5. Fatou Thiaw, USAID/COMFISH Climate Change Officer explains at Marrakech, Morocco how the project seeks to promote climate change sustainable behavior change and policy dialogue at the local, managerial, research and political levels.

2.3 IR3: Governance strategies, policies and best practices identified, tested, assessed and applied to build ecosystem resilience to threats to biodiversity conservation and climate risk

2.3.1 Science for decision making

To develop and implement collaborative and participatory fisheries management plans, there has to be a scientific knowledge base on fishing stocks and status. Hence, the project conducted many studies over the life of the project with CRODT, ISE, ENDA, IUPA and IRD/IFAN to support actors in crafting Local Agreements and fisheries collaborative management plans for Sardinella and Ethmalosa.

At the same time, the Ecological Monitoring Center (CSE) supported numerous cartographic studies within the framework of the elaboration of Local Agreements and participatory management plans. All this information is contained in a shared Geographical Information System created by the CSE (see http//www.sig-comfish.net).

Below is a summary of the main outputs achieved by USAID/COMFISH and research partners:

- Biological and ecological studies on priority species (Sardinella aurita, Sardinella maderensis and Ethmalosa fimbriata)
- Studies on fishing effort, volume of catch, population dynamics, seasonality and location of catch, species growth and size/timeframe to reach maturity, selectivity of fishing gear, etc.
- Studies on the socio-economic profile of fishers
- Comprehensive participatory mapping of fishing areas, habitat, stock distribution, fishing infrastructure, etc.
- Study on the relevance and effectiveness of local regulatory initiatives and measures in Sardinella fisheries was conducted by CRODT. A total of 246 actors were interviewed on the level of knowledge of fisheries measures, the level of compliance with the measures, the factors for non-compliance, the perception of the effectiveness of the measures, the impact of the measures, and perceptions on the future of small pelagic fishing.
- Study on Illegal, Unreported and Unregulated (IUU) fishing (together with the Senegalese Navy, Department of Fisheries Protection and Surveillance (DPSP) and the US Navy) and how it affects sustainable fisheries management, particularly Sardinella. This study helped to catalyze the formulation of a National Strategy against IUU fishing, prepared with the support of the World Bank "COPE" project.
- Studies on climate change and fisheries fed into fisheries planning and adaptation to climate change at the community, national, and regional level
- Study on the Sardinella value chain
- Studies on fisheries extension in Senegal carried out to craft a national fisheries extension strategy
- Socio-economic studies conducted to support the DPM's management plans on coastal shrimp under the World Bank GIRMAC project
- Study on internal and external fundraising and self-finance for CLPAs

Fishing outside Senegalese EEZ. These studies uncovered many important and previously undocumented facts on marine fisheries in the region. Faced with a constantly increasing

fishing pressure and its corollary of overexploitation of fisheries resources in waters under Senegalese jurisdiction, artisanal fishers have gradually developed operational strategies to maintain the viability of their production activities. One of the most important strategies noted in recent years corresponds to the use of fishing zones outside the Senegalese Exclusive Economic Zone (EEZ). It should be noted that in the majority of cases, catches made in these EEZs of neighboring countries are landed in Senegal and officially assimilated to catches made in Senegalese waters. This situation distorts the assessment of the state of exploitation of stocks whose potential is overestimated. In order to provide solutions to these problems, CRODT, with the support of the USAID/COMFISH project, set up a scientific research protocol to assess fishing effort and catches landed outside the Senegalese EEZ.

In six months of investigation, catches landed in six major landing sites from foreign EEZs were estimated at 108,272 tons; almost half (45%) of total production. It is in Mauritania where the most important quantities come from with 53,229 tons landed exclusively in Saint-Louis. Almost 30,000 tons comes from Guinea Bissau, and more than half of the catch landed in Joal (22,517 tons) is from the Gambian EEZ. Catches landed at Ziguinchor and Elinkine are mainly carried out in Guinea Bissau and, to a lesser extent, in Guinea Conakry.

IUU studies. A model of catch reconstruction provided first estimates of IUU fishing characterized by transshipment at sea, incursions of vessels into the Senegalese EEZ without authorization (foreign vessels), fishing in forbidden zones (foreign and domestic vessels) and the undeclared component for vessels that do not report their catches to authorities. The study uncovered the following results:

- The volume of IUU fish catch in the Senegalese EEZ landed by the foreign fleet is rising and estimated currently at 50,000 tons per year. The value of IUU catch over a decade is nearly US $3 billion.

- The volume of fish from IUU fishing is so large that it could bias any assessment that does not take into account IUU fishing, and is so large it may compete with artisanal fisheries for Sardinella species

This study greatly inspired the GOS National Strategy and Action Plan to Combat Illegal Fishing (2013). The Action Plan has the overall objective “To eliminate IUU fishing in waters under Senegalese jurisdiction and in the open sea through a strengthened national system of monitoring, control and surveillance (MCS) of fisheries and through improved coordination of national and international actions.” To achieve this objective the Action Plan lists six sub-objectives:

1. Legal, judicial and institutional strengthening
2. Strengthened operational capabilities
3. Strengthened capacity of key actors
4. Improved fisheries governance
5. Strengthened commercial measures
6. Strengthened sub-regional, regional, and international cooperation

USAID/COMFISH contributed to most of these sub-objectives of the Action Plan in addition to investments by the administration and other projects and institutions including PRAO (WB), ADUPES (EU), WWF and CSRP.

Figure 6. Illegal foreign vessel fishing for sardinella in Senegal EEZ

Environmental factors in the Sardinella fishery. Modeling the sardinella fishery in Senegal through CPUE (catch per unit of effort), combined with the CRODT temperature index; the CRODT Upwelling Index; and the Atlantic Oscillation Index (AMO) was completed. The model established that the highest landings of Sardinella occur at high ocean temperatures. This model explains why the 2008-2011 landings in Senegal and in the subregion were much higher than expected. The model also shows that higher upwelling index numbers increase the amount of landings. The studies clearly indicated that climate change has an impact on the landings of Sardinella in Senegal. These data are now available to be integrated into the process of implementation of the Fisheries NAP and Participatory Sardinella Management Plans where specific adaptation and management measures related to this knowledge can be considered.

ELEFAN. A stock assessment software based on size frequencies, was produced as part of a contract between USAID/COMFISH and the University of British Columbia. The final product was delivered to the University of Rhode Island and distributed to project partners (DPM, CRODT, IUPA, IFAN and WWF). The objective of this software package was to provide a simple stock assessment tool and train fisheries scientists, managers and other partners to use it for fisheries assessment and management. A workshop was held at IUPA to train partners on the use of the software.

Selectivity of fishing gear. Field studies were conducted in the Sine Saloum area to document the selectivity of fishing gear catching Ethmalosa and improve recommended mesh size to avoid catching juveniles. This activity was linked to the process of collaborative fisheries management planning of Ethmalosa.

2.3.2 Collaborative fisheries management planning

In collaboration with technical partners, fisheries administrations, local administrative authorities, local governing bodies (CLPA), and local communities, five participatory management plans for Sardinella were developed, technically validated and approved covering virtually all the major fishing areas of the country (Petite Côte, Cape Verde, Great South Coast, Great North Coast and Casamance). These management plans directly support the Government of Senegal through its Sector Policy Letter (LPSD-PA), which provides for the implementation of tools for sustainable management of resources and mechanisms for satisfying national demand. The diagnostic studies listed above and the results of all the consultations with the

stakeholders show unequivocally the state of overexploitation of Sardinella fisheries. The management plans are genuine management tools and bring together all the proposals gathered at the strategic and local level and translated into measures for the management of these Sardinella fisheries.

In order to facilitate a network of inter-CLPA co-management consultations on Sardinella, zones of CLPAs that exploit the same fishing grounds were formed for inter-CLPA agreement and ecosystem-based management (Sustainable Development Units). These zones are also based on coastal Administrative Departments, of which there are six approved by the Department of Marine Fisheries. The Department clusters have 2-4 CLPAs in their geographic boundaries. The zones encompass the following CLPAs (see also Figure 7):

Zone (North to South)	Administrative Department	CLPAs
1.	Departments of Pikine (Grand Mbao, Petit Mbao, Thiaroye, Hann) and Rufisque	Pikine, Hann, Rufisque/ Bargny and Yenne/ Dialaw
2.	Department of Mbour	Sindia Nord and Sud, Mbour, Joal
3.	Department of Dakar, Thiès and Tivaouane	Dakar Ouest (Yoff), Cayar and Fasse Boye
4.	Department of Saint Louis and Louga	Saint Louis and Loumpoul
5.	Department of Foundiougne	Niodior, Bassoul, Missirah, Djirnda and Foundiougne
6.	Department of Ziguinchor and Bignona	Ziguinchor and Bignona

The management planning approval process at the national level for the first two Sardinella management plans is illustrated in Figure 6. USAID/COMFISH convened two meetings of the National Management Committee of Small Pelagics (CNGPP) to validate the proposed co-management measures. CNGPP is responsible for reviewing the Local Agreements and co-management measures adopted by CLPAs and to provide technical advice to the National Consultative Council on Marine Fisheries (CNCPM), which in turn completes a review and final recommendation for the Minister of Fisheries.

After the first two Management Plans were approved, the CNGPP was dissolved and so far it has not been replaced by another body so once the Plans are approved at the level of the CLPA, they are sent to the National Consultative Council on Marine Fisheries for review and then to the Minister of Fisheries for approval. Once all management plans from the five zones have been reviewed and approved, a national Sardinella management plan which provides the overall goals, objectives, and minimum fishery protocols and measures will be reviewed along with all six zones of local co-management plans as annexes. When validated with recommendations it will be submitted to the Minister of Fisheries. The entire process requires substantial effort and facilitation as these fisheries bodies do not meet regularly. The realization of this process will improve the management of Sardinella and consequently the status of the stock whose ecological, social and food security importance is crucial.

The strategy of USAID/COMFISH to work in developing Local Agreements and inter-CLPA zones was able to speed implementation, surveillance and enforcement since the Local

Agreements were already in implementation with surveillance (except for the North (Saint Louis) and the South (Casamance) where the whole process began in FY 2014).

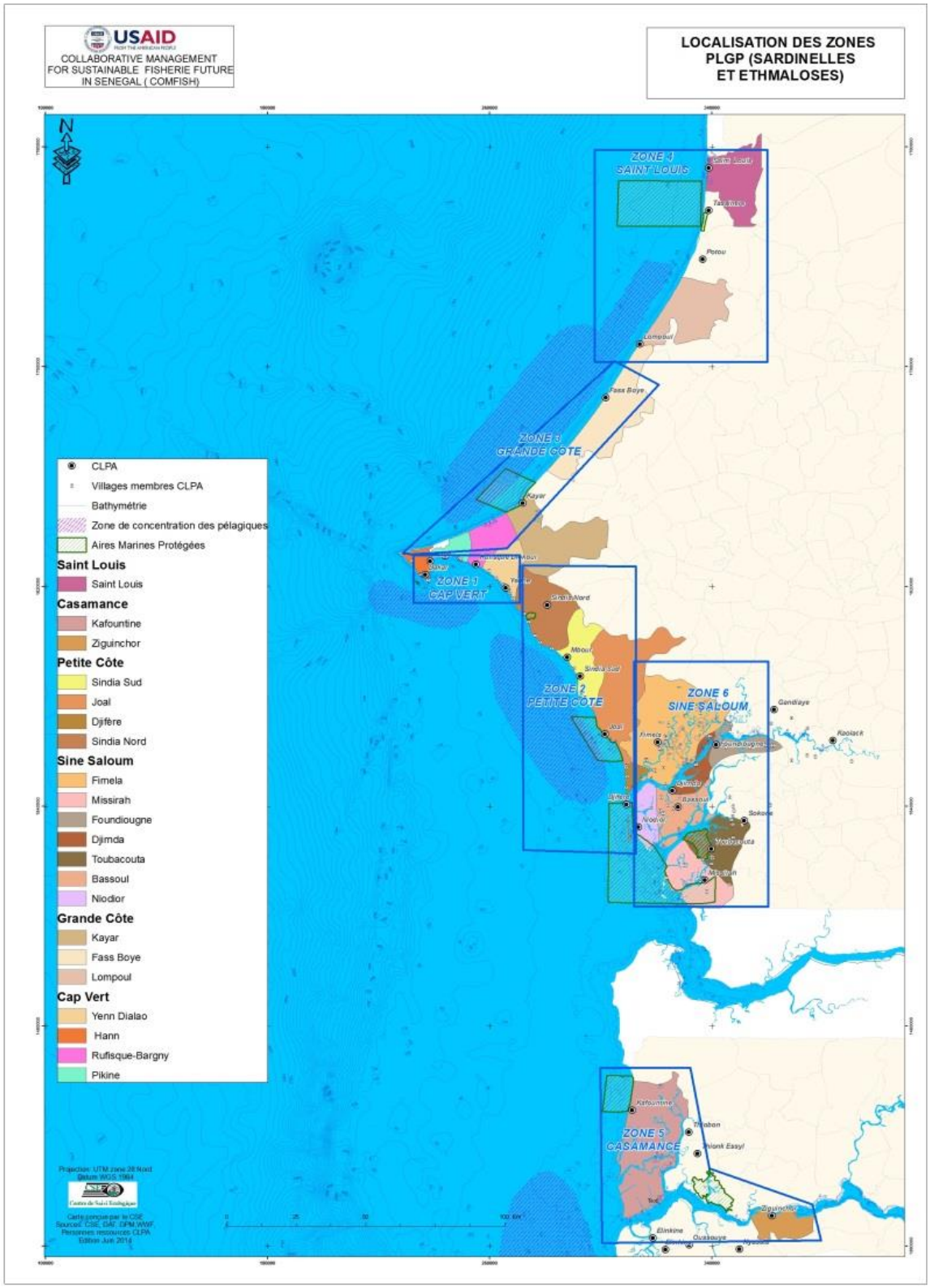

Figure 7. Coastal Administrative Departments for clusters (SMUs) of CLPA Fisheries Management Plans

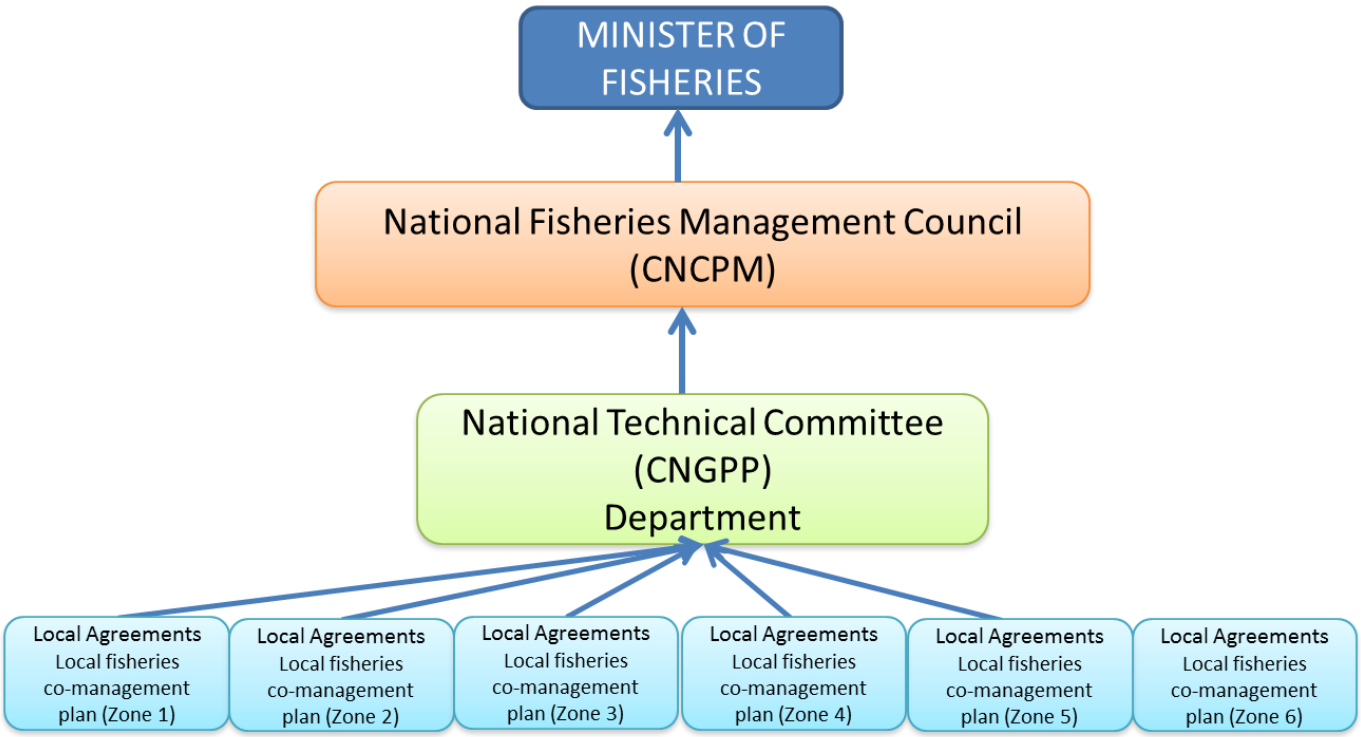

Figure 8. Bottom-up co-management planning of Sardinella fisheries in Senegal

For Ethmalosa, the development of the plan and the local-national approval process were similar, but there are only two local co-management consultation zones. They are defined below:

	Administrative Department	CLPAs
1.	Department of Ziguinchor and Bignona	Kafountine and Ziguinchor
2.	Department of Foundiougne	Niodior, Bassoul, Missirah, Djirnda and Foundiougne

The CLPAs for Ethmalosa in Sine Saloum and Casamance are the same as those for Sardinella, so the institutional capacity building had been taking place by USAID/COMFISH since FY14. However, the management plan for Ethmalosa is different and the formulation, discussion and validation of the management plan took place separately from Sardinella. The data collected through the focus groups and field studies were validated by the various actors in the process. The first drafts of Ethmalosa management plans in Sine Saloum and Casamance were drafted and are pending approval following synergy with the institutions that currently work on Ethmalosa at the West Africa regional level such as the CSRP (through the implementation of their small pelagics project and the activities of the GO-WAMER project on Ethmalosa financed by the EU).

2.3.3 Biodiversity conservation and sustainable management

USAID/COMFISH implemented a number of strategic interventions in the area of biodiversity conservation with the goal of improving the resilience of coastal and marine ecosystems. They included:

- Support to validate, raise awareness, achieve final approval, and implement Senegal's National Strategy on Marine Protected Areas in Senegal
- To strengthen the capacities and competences of the staff of DAMCP, DPM, the DEEC as well as community actors involved in the management of MPAs
- Evaluation of biological and socio-economic indicators and status of the Joal-Fadiouth MPA
- Study on MPA management gaps and challenges at three sites (Cayar, Joal and Bamboung)
- To carry out corrective measures/actions for improved biological, socio-economic, and governance conditions of MPAs
- Delineating the boundary of the Marine Protected Areas of Cayar and Joal-Fadiouth with permanent metallic buoys
- Establishment of governing bodies for the MPAs of Gandoul and Sangomar and the definition of management rules with the actors

Figure 9. Deploying buoys at the Cayar MPA

2.3.4 IR3 PMP Results

Project results in IR3 are documented by the project's results framework and performance management indicators:

- 27 action plans developed to support the process of fisheries management
- 41 technical studies and scientific reports contributing to participatory fisheries management plans
- 13 new fisheries technologies established (including Local Agreements, fish processing hygiene and sanitation agreements, and climate change adaptation actions)
- 42,837 fisheries actors who have applied new technologies or management practices
- 43,854 fisheries actors who have established new concerted rules of fisheries resources management
- 1,404,565 hectares of biological significance and/or natural resources under improved natural resource management

- 889,610 hectares in areas of biological significance under improved management (MPAs in the regions where the project is implemented and the Saloum Delta Reservation)

2.4 IR4: Increased climate change resilience and enhanced social and economic benefits to artisanal fishing communities provide incentives to a continued sustainable fisheries agenda

Both men and women in fisheries make significant contributions to the socio-economic development of the country. For decades, women have played critical roles in Senegal's fishing industry, accounting for approximately 30% of the workforce. Thousands of women work as wholesale fish traders and processors. Women's involvement in fisheries decision-making is essential because they play critical roles in both the fisheries sector and in addressing household nutritional needs. Because of women's roles in both of these realms, increasing involvement and creating leadership roles for women in the industry will foster more successful management of Senegal's marine fisheries.

In the USAID/COMFISH project, women processors were promoted as an integral part of the CLPA membership and contributed valuable input and contributions into this decision-making process. In addition, the interventions supported by USAID/COMFISH in the women's fish processing value chain, demonstrated how artisanal fish processing by women can be a positive example of empowerment, environmental protection, and poverty reduction.

Training, learning by doing and material support was provided to women's groups at 15 processing sites. This work was linked to building resilience to climate change and part of the 6 approved CLPA climate change adaptation plans.

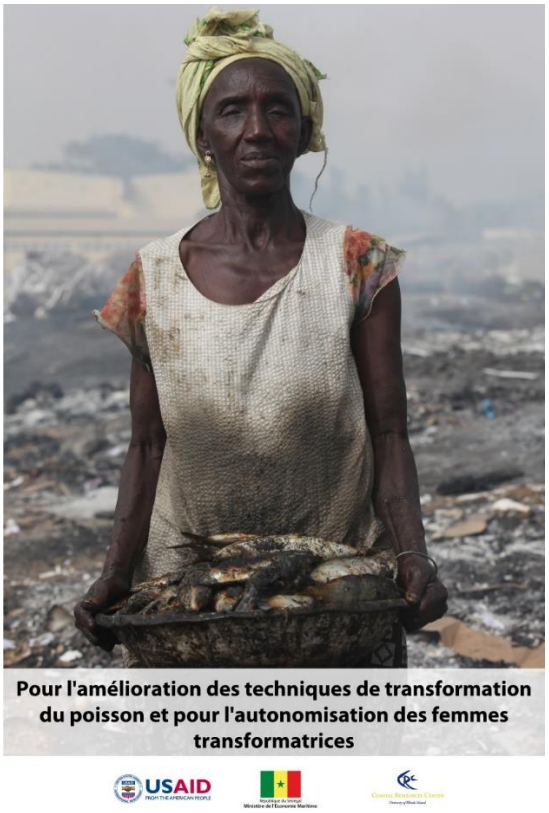

Figure 10. Woman fish processer

2.4.1 The Cayar local label of artisanal processed fish products

To support women fish processors to modernize their work tools, increase their production capacity, improve their conditions of work and increase their revenues, the USAID/COMFISH project supported with the most intense activity the fish processing demonstration site in Cayar (women's Economic Interest Group (GIE) "Mantoulaye Guène"). The main products from Cayar are smoked sardines or "keccax".

Activities included:

- A review of the challenges that hold women back from adopting good practices in fish processing (including lack of proper equipment, inadequate knowledge and understanding, lack of credit, and poor collective action)
- Construction and equipping of the facility to meet national standards and regulations, and with institutional approvals
- Training sessions over the life of the project on climate change, good fishing practices, environmental management, hygiene and quality, literacy, leadership and computer applications
- Development, outreach, validation, approval and implementation of a facility Code of Conduct covering fish purchase (no juveniles), hygiene and sanitation, processing methods, storage, and packaging
- Establishment and training of health committee
- Production tests to demonstrate the functionality of the unit before the inauguration
- Inauguration and commissioning of the facility in 2014
- Elaboration of business plan and monitoring plan
- Implementation of a revolving credit mechanism for the women's group
- Monitoring and inspection of the conditions of the facility to ensure compliance with regulations and best practices
- Microbiological analyzes of the products from the unit (resulted in Department of Fisheries Processing Industries (DITP) granting export authorization for the European Union; the only artisanal processing unit approved by the DITP for export to domestic, regional and international markets)
- Development of packaging practices and Cayar processed product label
- Promotion of the products at national and regional trade fairs
- Study on the socio-economic benefits of these activities on the women of the GIE "Mantoulaye Guène"

2.4.2 IR4 PMP Results

- USAID/COMFISH performance indicators document 16,533 fisheries households benefited directly from project interventions. These included activities across all IRs in terms of fisheries, climate change, fish processing and the value chain,

- A structured household survey of perceptions of well-being at project start and at the end using the same methodology and population sample showed that stakeholders perceived that their wellbeing had improved as a consequence of USAID/COMFISH interventions.

- Doubling to tripling of price per kilo for processed fish and similar increase in net profits for the Cayar women's processing group (GIE "Mantoulaye Guène")

- Larger and more diverse market opportunities for packaged fish products with the Cayar label (including the EU)

- Increased literacy of women, leadership, and ability to influence fisheries management

- Stronger social capital and financial self-sufficiency of women processors

- Demonstration of effective revolving credit scheme

3. PROGRESS MADE TOWARDS ACCOMPLISHING THE OBJECTIVE

The objective of USAID/COMFISH was to support the Government of Senegal in its efforts to achieve reform in the fisheries sector as stated in the former Fisheries Sector Policy Letter (LSP) and reaffirmed in the new "Lettre de Politique Sectorielle et de Développement de la Pêche et de l'Aquaculture (LPSD/PA) of 2015. USAID/COMFISH also held the objectives of promoting biodiversity conservation, fisheries sector sustainable livelihoods, gender equity and adaptation to the impacts of climate change.

The Agreement recognized that the fisheries ecosystem—including its biological, physical, and human sub-systems—is exceedingly complex. Sustainable reform with widespread impact takes many years. However, the long term (20-30 years) goal of USAID/COMFISH was that *Senegal's fisheries are no longer over-exploited and are (1) providing the nation with a reliable supply of high quality protein, (2) in a manner that contributes to the quality of life in artisanal fishing communities while (3) sustaining the ability of coastal and marine ecosystems to generate the goods and services that the people of Senegal want and need.*

In the near term, the USAID/COMFISH strategy was to provide some critical interventions to help catalyze and put in place the necessary preconditions to achieve the necessary consensus, political will, stakeholder understanding ,voice and actions that will set Senegal on a trajectory towards achieving this longer term vision of artisanal fisheries reform.

USAID/COMFISH was designed to support the Government of Senegal's efforts to achieve reform of its fisheries sector by strengthening many of the enabling conditions necessary for improved governance and demonstrating effective tools and approaches for ecosystem-based collaborative management of its marine fisheries through a learning by doing process.

A transformational change in the fisheries that results in major increases in standing fish stock biomass or increases in catch per unit of effort, or major increases in annual fish landings were not anticipated as Life of Project results. First, such results require a strong foundation of key enabling conditions. Genuine transformation in the fishery will be achieved when fishermen are making the key decisions about how fisheries will be managed, when fishermen are demonstrating responsible practices that allow sustainable fishing and when fishermen are demonstrating high voluntary compliance and self-enforcement of harvest rules. After these conditions are in place for a time, then fish biomass improvements can be expected.

The table below compares results defined in the project proposal awarded by USAID, and actual results of the project in terms of outputs and outcomes by Intermediate Result (IR).

IR	Results Listed in Project Award (as modified August 2015)	Actual LOP Results
IR1	• A CLPA institutional effectiveness index applied to selected project intervention sites demonstrate a significant improvement. • 24 CLPAs strengthened • Institutional capacity to collect high-quality data is increased • Over 12,050 individuals trained in areas that increase fisheries sector productivity and food security • Fisheries technicians and fishermen trained on data collection importance and methods at project sites • Conduct IEC campaign for sustainable fisheries food security in 24 pilot sites • Illegal, Unreported and Unregulated fishing from industrial vessels studied, findings shared and reviewed, and institutional support for planning and dialogue on this topic provided • Strengthen the capacity of stakeholders at the CLPA level to implement the National Strategy and Action Plan for IUU Fishing through participatory monitoring of compliance with fishing regulations through the development and implementation of Local Agreements (CL)	***Outputs*** • 21 CLPAs restructured and capacity developed including provision of materials, equipment and office infrastructure, and building operational functionality of the Coordination and Advisory Committees (ICC), and establishing operational Technical Committees with clear roles and responsibilities. • Establishment and implementation of CLPA self-financing plans • 15,474 individuals (31% women) trained in fisheries good practices and fisheries governance through 596 training workshops • Institutional strengthening of the National Management Committee on Small Pelagics • Capacity development in fisheries science, use of local knowledge, GIS, and collaboration among fisheries research organizations • 576 community radio programs and 279 written and audiovisual productions (videos, brochures, manuals and guides on the implementation of different strategies), • Preparation and implementation of a national Gender Strategy including a Declaration on Women in Fisheries and Action Plan • IUU fishing research conducted and used for policy formulation, and CLPA capacity in participatory monitoring strengthened (see IR3) ***Outcomes*** • CLPA capacity increased. A baseline and end of project survey documented a 77% increase in CLPA management effectiveness.
IR2	• Climate change vulnerability assessments and adaptation plans approved and implemented in 6 fishing communities • Climate change considerations are mainstreamed in national and sub-national fisheries policies and strategies, in particular national fisheries plans (sardinella and ethmalosa), regional fisheries plans, and CLPA Local Agreements • 12,705 stakeholders with increased capacity to adapt to the impacts of climate variability and change	***Outputs*** • 5,510 individuals trained in climate change and climate change adaptation (39% women). • Establishment of a national Steering Committee under the National Committee on Adaptation to Climate Change (COMNACC) on the integration of climate change into fisheries policy • Six climate change vulnerability studies completed at the level of CLPAs • Early Warning System of alerts for safety at sea established and demonstrated in 4 CLPAs with 44,430 alerts broadcast to reduce the risk of accidents at sea • ***Outcomes*** • 16,129 stakeholders with increased capacity to adapt to the impacts of climate variability and change • 492 institutions with strengthened capacity to adapt to the impacts of climate variability and change • National Adaptation Plan for Climate Change in Fisheries formally approved by both Environment and Fisheries Ministers • Six climate change adaptation plans at the level of CLPAs formally adopted by local authorities and implemented

IR	Results Listed in Project Award (as modified August 2015)	Actual LOP Results
IR3	• New technologies and fisheries sector management practices are developed and adopted by fisheries stakeholders • 42,837 fishers and others have applied new technologies or management practices • Two fisheries co-management plans are formulated and formally approved • 9 Local Agreements (Convention Local) for fisheries management in CLPAs are formulated, formally approved and implemented and include: ➢ The force of law once approved ➢ Increased participatory governance and decision-making for fishers and other local stakeholders ➢ Measures to implement technological/behavioral ecosystems-based fisheries innovations • 32 policies/regulations/administrative procedures approved and implementation begun on 95% of them • 46,646 fisheries stakeholders have established new concerted rules of fisheries resources management • CLPAs in the project's intervention zones (corresponding to up to 75% of CLPAs in the country) are strengthened and made functional through establishment of management committees (including on finance and fisheries surveillance), selection of facilitators and relays, and formulation and approval of Local Agreements and collaborative fisheries management plans • Alternative financing mechanisms for CLPAs to supplement financing via share of registration fees are defined and tested • 1,109,661 hectares of biological significance and/or natural resources under improved natural resource management • 450,656 hectares in areas of biological significance under improved management	***Outputs*** • 41 technical studies and scientific reports contributing to participatory fisheries management plans • 13 new fisheries technologies established • 43,854 fisheries actors who have established new concerted rules of fisheries resources management • Establishment of a national committee on the management of fishing capacity in Senegal • Draft Ethmalosa participatory fisheries management plan, tied to regional plan • Climate change considerations mainstreamed in participatory fishery management plans • Establishment of participatory CLPA fisheries surveillance of IUU fishing • Establishment of a national committee on the management of fishing capacity in Senegal • Studies on Illegal, Unreported, and Unregulated (IUU) fishing that provided impetus to the 2013 National Strategy to Combat IUU and IUU Action Plan ***Outcomes*** • 42,837 fisheries actors who have applied new technologies or management practices • 24 policies/regulations/administrative procedures approved and implementation begun • Nine CLPAs approved and implemented Local Agreements (Convention Local-CL) representing more than 60 fishing villages throughout the coastal zone of Senegal. • Ministerial approval of five participatory fisheries management plans for Sardinella across ecosystem based groupings of CLPAs; contribution to regional scale plan • Validation and approval of the National Strategy on Marine Protected Areas (MPAs) by the Ministry of Environment and Sustainable Development (MEDD) • 1,404,565 hectares of biological significance and/or natural resources under improved natural resource management • 889,610 hectares in areas of biological significance under improved management (MPAs in the regions where the project is implemented and the Saloum Delta Reservation)
IR4	• Over 16,533 artisanal fishery households in 24 CLPAs benefit directly from USAID/COMFISH interventions • Fisheries sector stakeholders in the project sites perceive that their welfare is better off due to project assistance • It is unlikely that fishery populations or other marine environmental conditions can be demonstrated to be improved with attribution solely to the efforts of this five-year project. However, the project will conduct research with stakeholders to track the evidence of positive movement toward biological reference points for selected fisheries and marine habitats • Over 200 women and their families have improved social and economic conditions as a consequence	***Outputs*** • 16,533 fisheries households benefited directly from project interventions • Improved processed fisheries products, packaging, labelling, product recognition, and markets. The Cayar smoked fish product label is recognized nationally. The Cayar products are invited to national trade forums and shows. • Larger and more diverse market opportunities for packaged fish products with the Cayar label (including the EU) • Demonstration of effective revolving credit scheme in association with processing groups that enhance the fisheries value chain and well-being of fishing communities and families ***Outcomes*** • Stakeholders perceived that their wellbeing had improved as a consequence of USAID/COMFISH interventions. This was demonstrated by a structured household survey of

IR	Results Listed in Project Award (as modified August 2015)	Actual LOP Results
	of improved fish processing techniques, higher quality product, and improved marketing	perceptions of well-being at project start and end using the same population sample. • EU export approval of the Cayar based modern artisanal fish processing center (run by women); a first in Senegal • Tripling of price per kilo for processed fish and similar increase in net profits for the Cayar women's processing group (GIE "Mantoulaye Guène")

The table indicates the progress toward the result objectives. Results in terms of fisheries co-management plans, Local Agreements, CLPA capacity development, capacity development of research institutions and fisheries research collaboration, other policy advances in climate change adaptation, fish processing, and safety at sea, and changes in stakeholder behavior, all exceeded original expectations toward reform of the fisheries sector.

4. SIGNIFICANCE OF THE ACTIVITIES

Activities, results, and outcomes are delineated above. This section speaks to broader significance in terms of transforming fisheries in Senegal, and to innovative strategies introduced. USAID/COMFISH project support to the Government of Senegal and stakeholders in the artisanal fisheries sector began at a time when legislation to codify participatory and deconcentrated fisheries governance bodies via the CLPA had been put in place, but was not implemented. Donor initiatives, such as the World Bank (PRAO), had focused on establishment and capacity development of Local Fisheries Counsels (CLP), a parallel/sub-structure of the CLPA, and JICA had begun to build the capacity of some selected CLPAs. The USAID/COMFISH projects' key contribution in this context was to catalyze the definitive emergence and development of the CLPA as the functional local artisanal fisheries governance structure of reference as envisioned in the legislation by reactivating 21 of a total 39 CLPAs coastwide.

The project was able to make this contribution through a nested governance approach that focused on inclusive, equitable capacity development of the administration and other fisheries stakeholders at all levels. The project successfully accompanied capacity development with effective strategies and tools for the practical application and continuous adaptation and improvement of sustainable fisheries resource management practices (CLs, Collaborative Fisheries Management Plans, Local and National Climate Change Adaptation Plans, Hygiene Charters, etc.). Project support focused simultaneously on national policy and field level practice, facilitating increased dialogue, learning and trust to remove barriers and increase the quality and efficiency of actions at all levels. This approach resulted in significant legislative, regulatory and policy milestones (approved CLs, FMPs and Adaptation Plans, National Strategy on Marine Protected Areas, participation of stakeholders in revision of the Fisheries Code (2015) and LPSD-PA (2016)) and in appropriation of improved practices, voluntary compliance, and participatory surveillance at local levels.

As a result of project assistance, CLPAs, the administration, women processors and other stakeholders in the sector have demonstrated processes that enable improved governance of the artisanal sector at local, zonal and national scales. These stakeholders better understand the integrated nature of their actions and the value of the contributions of all actors. Stakeholders also understand more clearly the challenges that remain, including the

need to further harmonize, institutionalize and scale up these achievements. The project has facilitated a growing consensus and a strong community of practice for addressing these challenges going forward.

Following are highlights of some of the key strategies and the significance of their contribution to this result.

4.1 Ecosystem-based, participatory, fisheries management

Sardinella was identified by fisheries stakeholders in an inclusive and participatory national workshop as the top priority stock. Sardinella is critical because it accounts for approximately 80 percent of the volume of the catch in the country and is therefore invaluable in terms of the fisheries value chain and food security.

The ecosystem range of the species is the entire coast and West Africa region. The USAID/COMFISH project recognized from the beginning that from a biological standpoint and for sustainable management of fish stocks, effective fisheries management must cover the unit stock ecological zone. This meant that the management of Sardinella required formulation of the idea of fisheries Sustainable Management Units (SMUs), and it required buy-on on the idea on the part of DPM. Such an approach had not been applied in practice before in Senegal.

In order to apply and test the ecosystem approach, six groupings of CLPAs that exploit the same fishing grounds were formed. These groupings are also based on coastal Administrative Departments, of which there are six approved by the Department of Fisheries. The coastal Administrative Departments have 2-4 CLPAs in their geographic boundaries.

At the same time, the project facilitated the formulation of a national Sardinella management plan, which fed into a West Africa regional Sardinella planning initiative with the Sub-Regional Fisheries Commission (CSRP) and the Canary Current Large Marine Ecosystem program (CCLME). The sub-national Sardinella plans composed of Sustainable Management Units were submitted as Annexes to the national plan to the Minister of Fisheries for approval.

4.2 Local Agreements as a key strategy for CLPA institutional strengthening

It was with the aim of turning CLPAs into operational units for the purpose of collaborative fisheries management on an ecosystem scale that Local Agreements (similar to municipal ordinances in the U.S.) were formally established in CLPAs. As pioneered by COMFISH, there are 15 steps (see section 2.1.2) in the process of establishing Local Agreements.

The process of establishing and developing Local Agreements enables stakeholders to identify the assets and challenges of fishing, and to get the project's input from scientific evidence based on studies by partner research institutes. It further enables stakeholders to learn about the management rules in Local Agreements that can change their behavior and lead them to adopt good fishing practices and adapt to climate change impacts. This process also contributes to better organizational structure of CLPAs and strengthens the capacity of their various committees, so that the stakeholders have functioning committees for monitoring, control, self-financing and oversight on management rules.

The CL therefore serves as a tool that can enable stakeholders to: (1) identify a coherent list of activities for each CLPA and for all the CLPAs (covering the geographic and biological distribution area of a given unit stock) to engage in the sustainable management; (2) have

information on the assets and challenges of fishing in their areas; and (3) contribute to revitalize local governance bodies by structuring CLPAs and establishing units for monitoring, control and surveillance, and the financial self-reliance of the CLPA. This whole process makes it possible for CLs to give stakeholders the mechanisms for adopting good fishing practices, which is one of the prerequisites for developing collaborative fisheries management plans.

4.3 Mainstreaming climate change in marine fisheries

Mainstreaming climate change and adaptation at the local (CLPA) and national level in fisheries management plans, CLPA adaptation plans, and in one of the first official national fisheries adaptation plan established anywhere in the world was significant. It provides policy supportive links and feedback loops between national and sub-national policy, implementation, and learning and adaptation.

Climate change considerations and adaptive actions were effectively integrated into each and every intervention area of USAID/COMFISH, also including gender empowerment and livelihoods (IR4), capacity building (IR1), and management planning (IR2).

Figure 4. Signing ceremony of the NAP/Fisheries by Ministers of Fisheries and Environment

The appreciation of the GOS is evidenced in a letter sent by the Ministry of Fisheries on November 1, 2016 to the COP of USAID/COMFISH Plus stating:

"In addition to your support toward the process of effectively integrating climate change adaptation in the sustainable development of marine fisheries in Senegal, you also allowed us to bring to the Marrakech COP 22 the Department of Fisheries' key focal point on climate change.

I would be most grateful if you would inform the USAID authorities our appreciation for this frank collaboration between USAID through COMFISH, and the Ministry of Fishing and the Maritime Economy through the Directorate of Maritime Fisheries."

Many regional and international climate change leaders and experts visited the USAID/COMFISH and DPM booth at the Conference of the Parties at Marrakech, Morocco, including the COP of the USAID West Africa Biodiversity and Climate Change project.

4.4 Gender approach

Women play a critical role in Senegal's fishing industry. Thousands of women work as wholesale fish traders and processors. However, they account for a much smaller percentage of those involved in fisheries governing bodies, as cultural factors hinder their ability to contribute to the decision-making process. Women's involvement in governing bodies is essential because they play critical roles in both the fisheries processing sector and assume great responsibility in child and family nutritional needs, education and social well-being. Because of women's roles in both of these realms, increasing involvement and creating leadership roles for women in the industry will foster more successful management of Senegal's wild fisheries.

Gender mainstreaming was a key component of the USAID/COMFISH project. To build the capacities of women working in the fisheries sector, so that they can protect their interests in the decision making process and be a voice for change, USAID/COMFISH facilitated the preparation of national Declaration on women in fisheries, developed a fisheries sector capacity building strategy for women, and facilitated an Action Plan that was adopted and signed by DPM and other project partners. These items are unique not only in Africa, but in global fisheries. The Declaration and Strategy define the values and criteria women want the authorities to address in order to enhance the mainstreaming of gender in fisheries policies, and especially throughout the development of fisheries management plans in Senegal.

The gender activities described earlier with respect to improving hygiene, sanitation, quality standards, storage and marketing also contribute to reducing post-harvest losses, improving the value chain and revenues, and supports a collective heritage of artisanal fish processing and stakeholders with a stronger voice to combat the growing number of foreign owned industrial processing plants adjacent to artisanal processing.

Figure 5. Women processing fish at Joal landing site

Innovative approaches to women's empowerment: Teaching tools adapted to women's level of education (songs, dances, images and documents translated into Wolof) were used.

This included the "DABU" method (which means catching up). It is a method for transmission of a message to people who have never been to school. The aim is not to transmit knowledge but to give the interested parties a simple message that arouses interest and commitment to action. The "DABU" method seeks to:

- Ensure interaction and active participation of all
- Galvanize, motivate and mobilize stakeholders on the need to self-manage

4.5 Model for artisanal fish processing

The Cayar fish processing facility is known and recognized as a reference in the artisanal processing of fish that the Ministry of Fisheries and Maritime Economy of Senegal wants to reproduce in all Senegal's artisanal processing sites. The Cayar facility is an important model in terms of standardization of processing sites with respect to hygiene, product quality, environmental sustainability, and women's empowerment. Since its inauguration, many national and international figures have visited the facility. These include the Minister of Fisheries and Maritime Economy, the current Minister of Infrastructure, and representatives of USAID and Congressional Offices from Washington, D.C. At the Dakar FIARA 2015 trade show the US ambassador to Senegal visited their booth.

The authorization given to the Cayar facility and women's group for export to the European Union obtained in 2016 is a first for artisanal fish processing in Senegal (and possibly Africa).

Overall, the Cayar model achieved multiple objectives:

- Reduced post-harvest losses
- Promoted international trade through eco-labeling
- Improved involvement of artisanal fishermen (men and women) in the value chain
- Demonstrated good processing practices and product quality
- Empowered women in fisheries in terms of leadership, literacy, marketing, and business management

It is a testament to the appreciation by GOS of the quality of work and value added of USAID/COMFISH that the Minister of Fisheries is committed to provide public funding to scale up the model of the GIE "Mantoulaye Guène" in Cayar. The Secretary General of the Ministry of Fisheries, under orders of the Minister, stated to the COP of USAID/COMFISH (now COP of USAID/COMFISH Plus) that the Ministry will commit 780,750,000 FCFA (about US $1.4 million) of public funds for this purpose. As the project came to an end, four artisanal processing sites were identified by the Ministry where the Cayar model would be replicated (Mbao, Fass Boye, Senegal Pencum and Goxxu Mbaac). The technical assistance of the USAID/COMFISH team was requested to provide capacity building in organizational dynamics for the women's groups at these sites.

5. SUCCESS STORIES

5.1 USAID promotes the adoption of a new model for sustainable fisheries and marine biodiversity conservation in Senegal

In Senegal, marine fisheries play a very important role in food security, livelihoods, and local and national economic growth. They provide an estimated 600,000 jobs—17 percent of the

total labor force- and produce 300,000 metric tons of high quality protein annually. Senegal's marine zone is one of the world's most biologically productive areas and home to over 1,000 species of fish, several species of cetaceans including dolphins and whales and five species of endangered marine turtles.

The sustainability of these biological and economic riches is being compromised by weaknesses in fisheries management, destructive and unsustainable fishing practices and overfishing. The crisis in the fisheries sector negatively impacts food security in the country: forty-six percent of households in Senegal are considered vulnerable and 20 percent highly vulnerable to food insecurity. According to the Global Hunger Index, this classifies the food security situation in Senegal as "serious".

To help address some of the above-mentioned issues in the fishery sector and contribute to sustainable fisheries and improved food security in Senegal, a USAID funded program called USAID/COMFISH- Collaborative Management for Sustainable Fisheries- consulted with key fisheries stakeholders and commissioned various studies on the fisheries situation to develop a better model for sustainable fisheries and marine biodiversity conservation. The model seeks to improve fisheries governance, strengthen the capacities of fisheries institutions and stakeholders and introduce new fisheries management structures called Sustainable Management Units (SMUs).

« *We welcome this initiative as it will go a long way to promoting sustainable fisheries, contribute to food security while preserving the marine environment in Senegal"* said Moustapha Thiam, the Director of the Senegalese Marine Fisheries Department during the official presentation of the new model. Other stakeholders including fishermen associations and donors, expressed satisfaction over the proposed model and promised to support its implementation.

The physical boundaries of the Sustainable Management Units would coincide with the physical boundaries of the biological stocks/ecosystems of fish stocks. Through these management units, the model will attempt to streamline the various fisheries management structures (Artisanal Fisheries Local Councils (CLPAs), Local fisheries Committees (CLPs), Beach Committees, etc.) so that they can better manage the fishery.

5.2 Strategy for the implementation of biodiversity conservation and sustainable fisheries in Senegal

Senegal has taken a very important step for the conservation of biodiversity and for promoting sustainable fishing through the development and validation of a national strategy of Marine Protected Areas (MPAs). The strategy is the result of a long participatory process between civil society, NGOs and the fisheries administration. It was financially and technically supported by USAID through the USAID/COMFISH project together with other partners of the Government of Senegal.

The cost of implementation of the strategy is estimated at 5 billion FCFA over five years and multiple donor initiatives are poised to contribute in various ways to its' realization in addition to USAID, including the EU, AFD, WB, MAVA through PRCM, WWF and others. It seeks to support the creation and effective management of new MPAs as a tool for fisheries management and marine and coastal biodiversity.

"This strategy will pave the way for the establishment of a coherent network of MPAs to ensure

the conservation of marine and coastal biodiversity and sustainable fisheries management" welcomed Camille Manel, Director of the Directorate of Marine Fisheries, Senegal.

Faced with the deterioration of the marine and coastal environment in Senegal, marked by lower species abundance, habitat degradation, and the high dependence of the population (about 600,000 direct and indirect jobs related to fishing) vis-à-vis fisheries resources, the implementation of the strategy should allow the recovery of fish stocks, protection of certain endangered marine and coastal species, and improved means livelihoods and food security.

Indeed, when they are well located and properly managed, Marine Protected Areas are effective tools for the conservation of biodiversity and sustainable management of marine and coastal resources. They help preserve key habitats such as seagrass beds, mangroves, mudflats, estuaries and deltas, island environments, etc. that are considered critical for the renewal of fisheries resources and the conservation of biodiversity.

In Senegal, marine coastal protected areas now cover a total area of 198,940 ha, or 1% of the Senegalese maritime space. This coverage is far from the 20 to 30% recommended for protection against fishing (see Durban Congress, 2003). The national MPA strategy will thus enable the Government of Senegal to respect its international commitments, in particular as regards the Convention on Biological Diversity, which obliges States Parties to designate at least 10% of their maritime space in Marine Protected Areas.

5.3 Bridging the gender and cultural gap in Senegal's fisheries sector

Women play a very important role in the artisanal fisheries sector of Senegal; at least 7,000 work as whole-sale fish traders and processors. While these women make a vital contribution to the welfare of their families as well as to the economic development of their country, their ability to effect change in the field of their employment is seriously impeded by persistent gender and culturally related obstacles. As a result, they are vastly under-represented (less than 5%) in fisheries governing bodies and cannot fully play their part in the development of this sector in Senegal.

To help overcome some of the obstacles towards the fair representation and active participation of women in the fisheries sector, the USAID/COMFISH first brought together 42 women for a workshop to analyze the situation of women working in the fisheries sector in Senegal. These women represented key women's fish processing associations from seven major fishing communities and landing sites in Senegal (Joal, Mbour, Sindia, Rufisque, Yenne, Foundiougne and Cayar).

The workshop tested gender-sensitive workshop techniques to improve women's participation. These techniques include the use of the main local language (Wolof) to bridge the linguistic barrier between men and women, most of whom are largely illiterate. In addition, women-friendly seating arrangements were introduced to give women front- row seats alongside men. And provisions were made to ensure equal talking time for both men and women, as well as the use of non-western forms of communication (such as utilizing local songs, dances, stories and myths) to create familiar cultural settings conducive to women's free expression and active participation.

This novel approach was subsequently tested at community gatherings as well as in more formal meetings, such as the recent follow-up national Gender and Fisheries Workshop organized by

the project in collaboration with the Fisheries Ministry and World Wildlife Fund. It has proven to be successful:

"*In the recent past, we were sidelined at community fisheries meetings and could hardly make our voices heard. With the current set-up introduced by the project, we feel more comfortable voicing our concerns,"* said Maty Ndao, a representative of a fish processing women's group in Cayar.

The follow-up workshop resulted in the formulation of a Women's Declaration, the first ever of its kind in the fisheries sector. An excerpt of the declaration reads:

"We, women working in the fisheries sector, are determined to sustainably develop the fisheries sector and to be a significant leverage to wealth creation in Senegal; we call on the Senegalese Government, the International Community and non-State actors to support this national initiative to reinforce women's roles in the fisheries sector."

Figure 6. Participants in the national workshop to develop a strategy for strengthening women's role in the fisheries sector

The meeting also resulted in the crafting of a Strategy and Action Plan to achieve the goals of the Declaration. The Strategy integrates the empowerment of women and the mainstreaming of their interests, concerns and values into fisheries management and policies. The declaration was handed over to the Senegalese Fisheries authorities who have approved it and pledged to act on its recommendations.

Figure 7 The women's declaration being handed over to fisheries authorities at the workshop

The USAID/COMFISH project and its partners will promote and disseminate the national Strategy among fishing communities, associations and other stakeholders while supporting women to lobby for the restructuring of CLPAs. For instance, in Joal—the largest fish landing site in Senegal—there is only one woman representative (among 33 totals) on the Counsel of the Coordinating Committee of the CLPA. Gender-balanced CLPAs where women have a veto right against gender-biased decision-making could play a stronger role in the sustainable management of fisheries in Senegal.

"*This declaration represents a first victory in the movement and organization of women to occupy their place and take on their role in the sustainable management of fisheries in Senegal*" congratulated Khady Sane Diouf, Deputy Director of USAID/COMFISH.

5.4 Maty Ndao, champion in the empowerment of women processors

At Cayar, Senegal's third largest fishing center, May Ndao helps empower her sisters to learn to read and write. This fishing center is located on the southern part of the great Senegalese coast, 58 km northeast of Dakar, and occupies a seafront site over 3 km long. Cayar is not only known for the amount of its landings of fish but also for the quality of organization of stakeholders in particular women processors.

At the head of these women is Maty Ndao, a true activist for the cause of women, working hard so that her sisters have a voice in fisheries decisions as well as on the issues of development of their localities.

Figure 8 Maty Ndao during the inauguration of the modern artisanal fish processing unit of Cayar

With the help of USAID/COMFISH and the participation of other women processors in Cayar, Maty Ndao helped reorganize and revitalize the women's fish processing economic group "Mantoulaye Guene," named after one of the pioneers of artisanal fish processing in Cayar. The group has the trust and support of several other partners including the town of Cayar, the Fisheries Department, the CLPA Cayar (Local Artisanal Fisheries Council), and others.

With the training assistance of COMFISH, Maty Ndao learned to read, write and count in Wolof – the main local language of Senegal and of the illiterate women in her GIE, which has over 220 members.

"Because of the functional literacy program, I now keep a small accounting notebook of my sales of keccax (dried, smoked fish) and I can also dial numbers now on my cell phone," said Bineta KAMA, one of learners of the adult literacy training initiative for the processing group.

Maty Ndao also managed to herself train, in turn, three women who support each other in their literacy work twice a week. The COMFISH functional literacy program partnered with APTE (a local NGO working for Fishing, Sanitation, Tourism and the Environment) and FORACTION (a local firm specializing in basic education for adults).

According Minata Dia, of APTE, the leadership of Maty Ndao and the use of tradition and local culture (songs, dance, percussion tom-tom, etc.) as knowledge transmission media were key to the success of the functional literacy program.

Figure 16. Women processing group of Cayar presenting excerpts from their Code of Conduct (good practices) at the Cayar processing area

One of the innovations in the collaborative work with this processing group is the formulation and group adoption of a Code of Conduct for better management of artisanal processing of keccax. This Code includes a number of measures to improve health, quality of processed products, and resource conservation (refusing to buy or process juvenile fish).

With the implementation of the Code and improved product quality they saw their incomes increase and this helps them to cope better with family expenses such as tuition and / or medical expenses of their children. In view of the quality of their products, they are regularly invited to participate in national and even international trade fairs.

5.5 A banner and a platform for transmission of early weather warnings that saves lives

On a calm morning in August 2015, Mamadou Sene, fisherman by trade, left his home, after Fajr prayer and heads, as usual, to the beach of Guet Ndar in St. Louis.

Once there, he approaches a high pole located in a clear area on which is hoisted a green banner. He looks up, lingers for a moment on the color of the banner before turning back, smiling.

Like Mamadou, many fishermen from St. Louis and several fishing areas throughout Senegal observe the same ritual every morning since the USAID/COMFISH project helped the local fisheries governance bodies (CLPAs) to erect the banners on the outskirts of fishing landing sites.

Figure 9. A banner hoisted yellow by the CLPA Mbour indicates that conditions at sea require taking caution

Before the implementation of these banners, several cases of loss of life and destruction of fishing equipment were regularly recorded at Guet Ndar. Now with these banners, we know when we should not go to sea," said Mamadou Sene.

The USAID/COMFISH project has provided CLPA poles and banners to 9 CLPAs that were erected at the outskirts of the main beaches of landings or fishing piers. The installation of these banners was preceded by several rounds of meetings, training sessions and radio broadcasts to explain the meaning and importance of the different banner colors. The green flag means absence of severe weather so authorized fishing trips; red means confirmation of the occurrence of severe weather phenomenon or prohibition of fishing trips; and, the color yellow means vigilance, possible occurrence of severe weather.

"We are grateful to USAID/COMFISH because these banners help us to save lives in St. Louis, which is more exposed than other fishing sites to climate change and weather variability," said Abdoulaye Mbodj, Secretary of Saint Louis CLPA.

Prior to the installation of the system of safety banners, the project worked with ANACIM – the National Agency of Civil Aviation and Meteorology - to establish a platform for transmission of early weather warnings for the safety of fishing boats and crew.

Climate change affects several key sectors of the Senegalese economy, including fisheries. According to specialists of the ANACIM they increase, among others, the frequency and intensity of weather events thus endangering the lives of coastal communities and especially the safety of fishermen at sea. According to the Directorate of Protection and Monitoring of Fisheries (DPSP), hundreds of casualties and / or missing and considerable material damage are recorded each year due to weather increasingly dangerous sea. The empirical knowledge of fisheries actors are no longer sufficient to protect and preserve their livelihoods against these threats.

Thus, in order to help fishing communities to increase their resilience to climate change impacts, particularly those of severe weather, the USAID / COMFISH in partnership with ANACIM set up a transmission platform of early weather warnings to fisheries stakeholders in Senegal.

Figure 10. Launching ceremony of the transmission platform of early weather warnings: transfer of mobile phones at ANACIM by the Deputy Director of USAID with the Minister of Transport and Tourism

Through this platform, SMS alerts are sent at least 24 hours in advance to several hundred fishing actors across Senegal, including representatives of CLPAs, and local fisheries technical services, to inform them of the occurrence of predicted dangerous weather conditions.

"The SMS alerts we receive help us make the right decision and avoid going to sea when it is not advised," said El Hadj Kane, Coordinator, CLPA Cayar.

Figure 11 Fishermen receive a weather warning SMS

In addition to awareness raising sessions on safety at sea, coastal communities of 9 CLPAs (Rufisque / Bargny, Yen / Dialaw, Mbour, Joal, Sindia North, Sindia South Cayar, St. Louis, Ziguinchor and Kafountine) regularly receive these SMS alerts.

"Over the past six months, we have not recorded any human casualties or boat and equipment damage since we started receiving these SMS weather alerts on our mobile" welcomed Mbaye Seck, CLPA Coordinator of Joal Fadiouth.

5.6 Establishment and implementation of nine Local Agreements for marine fisheries: a roadmap for sustainable fisheries management in Senegal

Faced with the failure of centralized fisheries management in Senegal, the government of Senegal has promoted a policy of fisheries co-management through the creation (by Law 98/32 of the Marine Fisheries Code) of CLPAs (Local Artisanal Fisheries Councils), which give prominence to fisheries stakeholders in fisheries decision making and management.

It is in this context that the USAID/COMFISH project supports co-management efforts by developing Local Agreements, which is a tool for decision-making and management/resolution of conflicts related to the exploitation of fishery resources.

Local Agreements are legal ordinances in accordance with fisheries legislation that are adopted in a consensual manner by a CLPA or between CLPAs for the sustainable management of fisheries resources. Their objective is to ensure the conservation and sustainable use of fisheries resources to meet the growing, diverse and changing needs of the population.

Thus, in collaboration with the CLPAs of the main fisheries sites in Senegal, specifically those of Joal-Fadiouth, Mbour, Sindia north, Sindia south, Ziguinchor, Kafountine, Cayar, Yenne/Dialaw and Rufisque/Bargny, the USAID/COMFISH project supported the development and implementation of 9 local agreements approved by the CLPAs and the administrative authorities for the sustainable management of fisheries resources. These 9 Agreements now constitute a real road map for the Management of fisheries resources in Senegal.

The project pioneered a 15 step inclusive and participatory process to establish the Agreements. The process takes several months and many stakeholder meetings to discuss and validate fishery rules and activities.

Overall, internal evaluations showed positive results with regard to the application of Local Agreement rules and resource management. The process of developing Local Agreements also enabled the USAID/COMFISH project to train over 15,474 people (31% women), through 596 training workshops covering, among others, administrative and financial management, hygiene and sanitation, participatory monitoring and enforcement, safety at sea, use of meteorological data, adaptation to climate change, and good fishing practices. More than 42,837 people were involved in setting up and applying new technologies, strategies and tools developed through the Local Agreement development and implementation process.

In addition to the dissemination of hard copies of the Agreements (about a hundred copies per CLPA), other means were used to reach the maximum number of actors:

- Awareness raising meetings (45) on management rules
- Radio broadcasts with community radio stations across all major fishing communities. Radio programming reached the general public and was led by CLPA staff and community representatives.

The establishment and use of the Local Agreements through a participatory and inclusive approach is the most appropriate tool to promote co-management in maritime fisheries. It was an innovation of the USAID/COMFISH project and allowed the reorganization and the operationalization of the CLPAs.

6. RECOMMENDATIONS

The following recommendations are principally for the Government of Senegal and CLPA level actors engaged in fisheries governance who have increased their capacity and begun to appropriate processes and innovations initiated and developed with USAID/COMFISH assistance. While significant progress has been made in identifying and testing systems and strategies for scale up and sustainability, continued assistance from technical and financial partners who support the Government in its' reform of the fisheries sector can have high value added at this stage in the process for the implementation of these recommendations. The way forward for realization of a robust, deconcentrated, participatory fisheries governance framework for eco-system based management has been demonstrated and enabling conditions strengthened, but state and local actors require additional technical and financial assistance to accompany their investment in consolidating achievements and further institutionalizing successful approaches.

Continued CLPA capacity development and monitoring. A baseline and end of project survey of CLPA capacity showed increased institutional capacity in the areas supported by USAID/COMFISH, but weaknesses remain. It is important to continue convening participatory meetings in the CLPAs for annual work planning and on key topics and to provide training, support, and assistance with organizational synergies and collaboration.

Implementation and monitoring of Local Agreements. Marine fisheries institutions at the national and local level are at the critical stage of implementation and monitoring of Local Agreements, fisheries management plans, and climate change adaptation plans.

Nine Local Agreements are currently in force, but they have been approved and signed only recently with little time for implementation, especially those in St. Louis and Casamance. Monitoring their implementation and providing on-going assistance to address challenges and weaknesses are important for their long term success.

In addition, Local Agreements need to be developed for all Senegalese CLPAs, including the Dakar, Sine-Saloum and Ziguinchor Regions.

Implementation of Sardinella and Ethmalosa management plans. It is critical to provide support in the implementation of the Sardinella management plans that were approved recently, and to provide similar support to the Ethmalosa management plans once prepared, validated, and approved. The inclusive, participatory and iterative process, and a great deal of fisheries science for decision making required the duration of the USAID/COMFISH project to achieve. The rationale for follow-on interventions by USAID and other technical and financial partners is to provide support to the government, CLPAs and other stakeholder institutions during initial implementation of management plans.

Climate change adaptation. Pursue the implementation of the National Climate Change Adaptation Plan for Fisheries, and the development and implementation of local adaptation plans, including in the Sine-Saloum. This is to better integrate the effects of climate change

into local planning in the face of the adverse impacts of climate change on communities, their environment and targeted fish stocks.

IUU fishing. Take action at the national level and regional level to combat IUU fishing and implement the National Plan to Combat Illegal Fishing. Combatting IUU fishing is crucial to preserve fisheries resources, to ensure the food security of populations, to combat the impoverishment of fishing communities and to optimize the economic benefits derived from fishing by the State. The National Plan has been endorsed by the relevant authorities and implementation is awaiting the finalization and signing by the Fisheries Minister of an Arête (ordinance). Once signed, the Arête will officially formalize a national Task Force to implement the National Plan. The Ministry of Fisheries and Maritime Economy (MPEM) and the Department of Fisheries Protection and Surveillance (DPSP) should ensure the operations of the Task Force and implementation of the National Plan and could benefit from technical and financial assistance to facilitate this effort.

A key action that is needed is to strengthen judicial and institutional capacity to improve catch traceability and implement the Port State Measures Agreement (PSMA) adopted by the FAO Conference in November 22, 2009 to prevent, combat and eliminate IUU fishing. The goal is to ensure that ships in Senegal's waters legally depart and land from Senegalese ports. Senegal is one of a small number of West African countries in the process of ratifying the PSMA.

Another needed action is for the Government of Senegal to continue to play a leadership role in and collaborate with the regional bodies that have a role in coordinating the fight against IUU fishing in Senegal and West Africa including the Economic Community of West African States (ECOWAS) and Sub-Regional Fisheries Commission (CSRP). USAID and other donors with West Africa Regional offices and technical assistance mechanisms should provide capacity development support at this level in addition to bi-lateral support to Senegal.

On the U.S. front, President Obama's administration was a strong advocate for sustainable use and protection of the global oceans. President Obama issued in June 2014 a Presidential Memorandum on a "Comprehensive Framework to Combat Illegal, Unreported, and Unregulated (IUU) Fishing and Seafood Fraud". The Memorandum directs all USG executive departments and agencies to combat IUU fishing and seafood fraud by strengthening coordination and implementation of relevant existing authorities and, where appropriate, by improving the transparency and traceability of the seafood supply chain. There are several U.S. driven initiatives that are rolling out, which future USAID initiatives in marine fisheries could support. Among the global initiatives rolling out are the Sea Scout and Ocean Network Initiatives in which Senegal has already been named an "Our Ocean Champion." All this provides strategic opportunities for partnerships with U.S. agencies active in the fight to combat IUU fishing.

Women in fisheries. Pursue the implementation of the National Strategy to strengthen the social, economic and political power of women in fisheries. This is to ensure their empowerment, strengthen fisheries management, improve the fisheries value chain, and improve the socio-economic well-being of fishing communities.

Income generating activities in fishing communities. Strengthen community-based savings and credit mechanisms in the fisheries value chain and support supplemental income-generating activities of coastal communities, especially targeting women in order to improve household food security.

Management planning for other shared fish stocks. Focus on a Management Plan for the sole fishery in Senegal given that The Gambia has a management plan and has undergone 2 Marine Stewardship Council Pre-Assessments (2008 and 2015) towards potential certification and eco-labeling. One of the gaps identified is the fact that the sole stock in question (Red and Black sole) is shared by the Gambia and southern Senegal (principally). Efforts at addressing the shared nature of the stock and a framework for harmonized (or at least coordinated) management of the stock could benefit both countries and in particular Senegalese fishermen (who make up the majority of Sole fishermen fishing in both Senegal and The Gambia).

A second opportunity for shared fisheries resource management is coordination and collaboration of the Allahein River estuary oyster fishery that is a transboundary resource between Senegal and The Gambia. This is a fishery that primarily involves women, with the local NGO called TRY working on oyster fisheries management on The Gambian side.

Water, Sanitation, and Health (WASH). WASH interventions are needed and should be integrated into future Government of Senegal investments and USAID support for initiatives at fishing docks, landing sites, and processing sites. This contributes to social well-being, resilience, more modern fishery, and improved value added of landed and processed products.

Project Steering Committee. USAID/COMFISH attempted to form a government Steering Committee of the project, but was not successful. In future USAID partnerships with national government agencies in marine fisheries, the idea of forming such a Steering Committee and/or establishing a project coordinator at the level of the Ministry of Fisheries should be revisited. This is crucial for better institutional collaboration, facilitates information and sharing of project results within the Ministry of Fisheries, and also accelerates the process of approving the strategies developed by the project. USAID/COMFISH experienced poor communication and coordination between the Ministry of Fisheries, its technical directorates and decentralized services (in the field). This delays the Ministry's response to decision-making (approval and effective use of strategies, plans, etc.). In the future, it would be wise to set up a mechanism for communication and sharing of information between the different players in the fisheries sector.

Capacity building for decentralized fisheries technical services. A feature of USAID/COMFISH was continuous involvement, learning by doing, and training of fisheries technical services at the local and sub-national level. This will continue to be important in the future. This allows them to better support and monitor project initiatives in the field and promotes sustained progress in fisheries governance in the future.

7. FINANCIAL SUMMARY

The table below provides a summary of how project funds were allocated across budget categories.

Budget Line Items	USAID Total Approved Budget	July 1, 2016 to September 30, 2016*	Actual Expense Life of Project
Personnel	$ 949,370	$ 157,246	$ 917,982
Students	$ 8,125	$ 1,114	$ 8,125
Fringe	$ 513,458	$ 78,496	$ 477,574
Consultants	$ 4,283,904	$ 821,202	$ 4,593,413

Other direct costs	$ 1,013,900	$ 144,308	$ 743,382
Subcontracts	$ 1,270,907	$ 11,068	$ 1,244,503
Travel	$ 1,390,880	$ 269,195	$ 1,294,735
Equipment	$ 103,463	-	$ 103,463
Indirect	$ 1,965,701	$ 394,184	$ 2,115,058
Total	**$ 11,499,709**	**$ 1,876,814**	**$ 11,498,236**

*Not previously reported

ANNEX 1. Performance Management Plan Results

COMFISH RESULTS 2011-2016										
Indicators	**LOP Target**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**Cumulative**	**Completion rate**	**Comments**
IR 1: Institutional and stakeholder capacity strengthened at all levels to implement an ecosystem based, collaborative management approach towards sustainable fisheries, taking into account climate change impacts in the fisheries sector										
1. Increase by 75% of the management effectiveness composite index score of CLPAs in USAID/COMFISH sites by 2016	75%	NA	Baseline value 0.04			0.17		0.17	77%	The COMFISH project documented a 77% increase in CLPA management effectiveness. Please note that the index is between -1 and 1 and that reference study placed it at 0.04 in 2012.
2. Number of individuals who have received USG supported short-term agricultural sector productivity or food security training (FTF 4.5.2-7)	12,050	45 M=37 F=7	986 M=596 F=390	2,078 M=1424 F=654	4,465 M=3016 F=1449	4,343 M=3009 F=1334	3,557 M=2588 F=969	15,474 M=10,670 F=4,803	128%	The project has trained 15,474 people (31% women), for a total of 596 trainings.
3.Number of written and/or audiovisual productions intended for capacity building of co-management institutions and fisheries actors	261	0	2	9	14	147	107	279	107%	279 written and audio productions (radios shows, brochure productions, videos)
4. Number of research and educational organizations, government agencies, and NGOs who have strengthened their capacity as a result of USG assistance	196	0	15	22	71	64	377	549	280%	549 organizations have strengthened their capacities

COMFISH RESULTS 2011-2016										
Indicators	**LOP Target**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**Cumulative**	**Completion rate**	**Comments**
IR 2: Vulnerability assessed and national/local institutional capacity strengthened to adapt to the impacts of climate variability and change										
5. Number of people receiving training in global climate change as a result of USG assistance	4,673	0	394 M=266 F=128	782 M=528 F=254	1,841 M=1129 F=712	1,377 M= 1045 F= 332	1,116 M= 397 F= 719	5,510 M=3365 F=2145	117%	5,510 trained, of which 39% are women
6. Number of climate change vulnerability assessments conducted as a result of USG assistance	6	0	0	3	0	1	3	7	116%	Vulnerability assessments are completed for the areas of Saint Louis, Kafountine, Ziguinchor, Rufisque-Bargny, Sindia et Joal
7. Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change (mitigation or adaptation) and/or biodiversity conservation officially proposed, adopted, or implemented as a result of USG assistance	17	0	0	3	11	2	13	29	171%	29 policies (adaptation plans, hygiene agreements)
8. Number of stakeholders with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance	12,705	700	986	2,078	4,465	4,343	3,557	16,129	127%	16,129 have increased their capacity to adapt to climate change, of which 30% women
RI 3 : Governance strategies, policies and best practices identified, tested and applied to build ecosystem resilience to threats to biodiversity conservation and climate risk										

COMFISH RESULTS 2011-2016										
Indicators	**LOP Target**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**Cumulative**	**Completion rate**	**Comments**
9. Number of action plans and/or projects developed to support the process of fisheries management	27	0	2	6	4	7	8	27	100%	27 action plans developed to support the process of fisheries management
10. Number of scientific reports contributing to the management plans for Sustainable Management Units (UGD)	45	0	2	11	9	10	9	41	91%	41 technical studies on fisheries
11. Number of lines of synergies created in the process of establishing Sustainable Management Units (UGD)	21	0	1	4	6	4	6	21	100%	COMFISH created 21 synergies
12. Number of policies/regulations/administrative procedures analyzed (FTF 4.5.1-24 stage 1)	68	13	10	21	16	5	16	81	119%	81 policies and other documents have been analyzed
13. Number of policies/regulations/administrative procedures drafted and presented for public/stakeholder consultation (FTF 4.5.1-24 stage 2)	12	0	3	7	2	0	0	12	100%	Adaptation plans, hygiene agreements, Local Agreements
14. Number of policies/regulations/administrative procedures presented for legislation/decree (FTF 4.5.1-24 stage 3)	16	1	3	8	0	3	2	17	106%	Adaptation plans, hygiene agreements, Local Agreements

COMFISH RESULTS 2011-2016										
Indicators	**LOP Target**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**Cumulative**	**Completion rate**	**Comments**
15. Number of policies/regulations/administrative procedures prepared with USG assistance passed/approved (FTF 4.5.1-24 stage 4)	24	0	2	9	7	4	2	24	100%	Adaptation plans, hygiene agreements, Local Agreements
16. Number of policies/regulations/administrative procedures passed for which implementation has begun (FTF 4.5.1-24 stage 5)	32	0	0	3	11	2	8	24	75%	Adaptation plans, hygiene agreements, Local Agreements
17. Number of new technologies of fisheries management established	17	0	4	3	4	0	2	13	76%	Implementing Local Agreements, hygiene agreements and adaptation plans
18. Number of fisheries actors who have established new concerted rules of fisheries resources management	46,646	0	20,940	10,056	12,858			43,854	94%	
19. Number of farmers and others who have applied new technologies or management practices as a result of USG assistance (FTF 4.5.2-5)	42,837	0	0	7,685	32,360	2,792		42,837	100%	
20. Number of hectares of biological significance and/or natural resources under improved natural resource management (Biodiversity indicator 4.8.1-26)	1,109,661	0	0	334,104	603,714	171,843		1,404,565	126%	Total area where project has been implemented

COMFISH RESULTS 2011-2016										
Indicators	**LOP Target**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**Cumulative**	**Completion rate**	**Comments**
21. Number of hectares in areas of biological significance under improved management as a result of USG assistance	450,656	0	0	41,500	66,496	342,660		889,610	197%	Total area of marine protected areas and the Saloum reserve.
IR 4. Increased climate change resilience and enhanced social and economic benefits to artisanal fishing communities provide incentives to a continued sustainable fisheries agenda										
22. Number of institutions that have strengthened their capacity to adapt to the impacts of climate variability and change with the assistance of the USG (This indicator was added in FY15)	362	0	35	63	127	104	163	492	136%	
23. Number of rural households benefiting directly from USG interventions	16,533		Baseline Study: 10,331 households	9131	7402			16,533	100%	Households located in the project intervention areas
24. Fishery sector stakeholders in the project sites perceive that their welfare is better off due to USG assistance			Baseline Study				2nd study			In general, the actors feel like their welfare has increased due to COMFISH. (Refer to full report for details)

ANNEX 2. List of Technical Documents Produced by USAID/COMFISH

Technical Documents	
2011	1. Rapport de atelier sur l'aménagement des pêcheries et la sélection des stocks prioritaires, USAID/COMFISH
	2. Evaluation of the legal and institutional capacity of the Conseil Local de Pêche Artisanale (CLPA), KARP, USAID/COMFISH
	3. Senegal fisheries governance needs assessment, Lopez, USAID/COMFISH
	4. Guide méthodologique pour l'evaluation de la vulnérabilité au changement climatique au niveau communautaire (zones côtières), Septembre, ENDA, USAID/COMFISH
2012	5. Amélioration des techniques de traitement et de conservation du poisson à Cayar : Code de Bonnes conduites des femmes transformatrices de produits halieutiques de Cayar pour la fabrication de poisson braisé séché: APTE, USAID/COMFISH
	6. Analyse microbiologique et chimique des sardinelles braisées séchées ou 'keccax' à Cayar (Evaluation de la qualité hygiénique), Consultants (APTE), USAID/COMFISH
	7. Dynamique de l'occupation des sols, cartographie des CLPA, des zones de pêche et mise en place d'un système d'information géographique, CSE
	8. Dynamique des populations de sardinelles en Afrique du Nord-Ouest : contraintes environnementales, biologiques et socio-économiques, CRODT USAID/COMFISH
	9. Etat des lieux du site de transformation artisanale des produits halieutiques de Cayar, Consultants (APTE), USAID/COMFISH
	10. Evaluer et suivre les impacts des AMP sur la base d'indicateurs biologiques, socio-économiques et de gouvernance : Etude de cas sur l'AMP de Joal-Fadjouth, WWF/CRODT, USAID/COMFISH
	11. Rapport de missions de prospection sur la vulnérabilité des zones côtières en relation avec les activités de pêche (Mbour Mballing Pointe Sarène Ngaparou Saly Somone Ndayane Poponguine Guéréo Kayar Rufisque Yenn Sindou et Foundiougne), CAREX/ISE/UCAD
	12. Rapport sur le recensement des ménages du secteur de la pêche dans les CLPA de: Joal-Fadiouth, Mbour, Sindia, Foundiougne, Cayar, Rufisque-Bargny, Yenne-Dialaw, USAID/COMFISH
	13. Rapport sur le recensement des organisations professionnelles du secteur de la pêche dans les CLPA de : Joal-Fadiouth, Mbour, Sindia, Foundiougne, Cayar, Rufisque-Bargny, Yenne-Dialaw, USAID/COMFISH
	14. Rapport technique de l'atelier d'identification des stratégies pour les Conseils Locaux de pêche Artisanale (CLPA) dans la mise en place des Unités de Gestion Durable des ressources (UGD), WWF USAID/COMFISH
	15. Recensement de la pêche crevettière dans le Sine Saloum, USAID/COMFISH
	16. Roles of women in fishing communities of Dakar, the Petite Cote and Sine Saloum, USAID/COMFISH
	17. Situation de référence sur la perception des acteurs de l'état de leur bien-être social au niveau des sites d'intervention du programme Mbaye A. USAID/COMFISH
	18. Stratégie de renforcement des capacités des CLPA dans la zone d'intervention du projet USAID/COMFISH, FORACTION

	19. Stratégie de renforcement des capacités des CLPA dans le cadre de la mise en œuvre des unités de gestion durable des ressources, WWF USAID/COMFISH
	20. Stratégie de renforcement des capacités et du pouvoir social et économique des femmes actives dans la pêche, WWF, USAID/COMFISH
	21. Description des séries statistiques sur l'effort, les captures et l'environnement hydroclimatique au niveau des sites de Kayar, Mbour et Joal, Rapport CRODT
	22. Construction d'indicateurs pour le suivi-évaluation de la performance des Conseils Locaux de Pêche Artisanale au Sénégal, Séne C. USAID/COMFISH
	23. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Joal-Fadiouth, Région de Thiès, Département de Mbour, République du Sénégal, USAID/COMFISH
	24. Convention locale pour une gestion durable des ressources halieutiques **:** Conseil Local de la Pêche Artisanale de Sindia: Région de Thiès, Département de Mbour, Sous Préfecture de Sindia, République du Sénégal, USAID/COMFISH
2013	25. Stratégie Nationale pour les Aires Marines Protégées au Sénégal, DAMPC, USAID/COMFISH
	26. Evaluation de l'effort et des captures réalisés hors de la ZEE sénégalaise par la pêche artisanale, CRODT, USAID/COMFISH
	27. Etude sur la vulgarisation dans le secteur de la pêche au Sénégal, AB. Diagne, USAID/COMFISH
	28. Etude diagnostique des lacunes et contraintes de la gouvernance des aires marines protégées de Joal-Fadiouth, Cayar et Bamboung, USAID/COMFISH, CRODT
	29. Etude diagnostique des lacunes et contraintes de la gouvernance des aires marines protegées de Joal-Fadiouth, Cayar et Bamboung : USAID/COMFISH
	30. Estimation préliminaire des captures de la Pêche Illicite Non Déclarée et Non Réglementée (INN) au Sénégal, sources de données, logique, et conclusions, USAID/COMFISH
	31. Cartographie des CLPA de Mbour, Sindia, Joal, Yene, Rufisque Cayar et de la migration des stocks Rapport d'activité, CSE, USAID/COMFISH
	32. Cartographie de l'occupation du sol de la zone d'emprise des CLPA (Rufisque-Bargny, Sindia Mbour, Cayar, Joal et Yenne- Dialao), distribution et dynamique des stocks, CSE, USAID/COMFISH
	33. Analyse de la vulnérabilité des communautés côtières et stratégies d'adaptation au changement climatique dans les CLPA de Rufisque/Bargny, Sindia et Joal/Fadiouth, CAREX :ISE/UCAD
	34. Amélioration des techniques de traitement et de conservation du poisson à Cayar : Etude sur les conditions de longue conservation du poisson BRAISE-SECHE (keccax) à Cayar, APTE, USAID/COMFISH
	35. Amélioration des connaissances sur les aspects du changement climatique et la pêche dans les zones côtières du Sénégal et de la Commission Sous Régionale des Pêches (CSRP), Kane A.
	36. Plan d'Adaptation au changement climatique à l'échelle du Conseil Local de la Pêche Artisanale de Joal-Fadiouth ; République de Sénégal, ISE, USAID/COMFISH
	37. Plan d'Adaptation au changement climatique à l'échelle du Conseil Local de la Pêche Artisanale de Rufisque/Bargny; République de Sénégal, ISE, USAID/COMFISH
	38. Plan d'Adaptation au changement climatique à l'échelle du Conseil Local de la Pêche Artisanale de Sindia; République de Sénégal, ISE, USAID/COMFISH

	39. Plan d'Adaptation au changement climatique à l'échelle du Conseil Local de la Pêche Artisanale de Ziguinchor; République de Sénégal, CSE USAID/COMFISH
	40. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Cayar : (CLPA/CAYAR), Région de Thiès, Département de Mbour, République de Sénégal, USAID/COMFISH
	41. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Mbour : Région de Thiès, Département de Mbour, Préfecture de Mbour, République du Sénégal, USAID/COMFISH
	42. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Rufisque/Bargny : Région de Dakar, Département de Rufisque, République du Sénégal, USAID/COMFISH
	43. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Yene/Dialaw,: Région de Dakar, Département de Rufisque, Arrondissement de Bambilor, République du Sénégal, USAID/COMFISH
2014	44. Amélioration des techniques de traitement et de conservation du poisson à Cayar : Guide des bonnes pratiques en Wolof « TEERE BU TËNK MBAAXU SOPPIN AK NJAAYINU KECCAX » ATPE USAID/COMFISH
	45. Amélioration des techniques de traitement et de conservation du poisson à Cayar : Guide des bonnes pratiques de transformation et de commercialisation du KECCAX, APTE USAID/COMFISH
	46. Cartographie des Sites et infrastructures de pêche des CLPA de Saint-Louis, Ziguinchor Sédhiou et mise à jour du système d'information géographique, CSE, USAID/COMFISH
	47. Contribution du projet USAID/Comfish à l'amélioration de l'adaptation et de la résilience des écosystèmes et communautés côtières face au changement climatique, Kane A.
	48. ELEFAN in R: a new tool for length-frequency analysis, USAID/COMFISH/UBC/IUPA
	49. Etude bioécologique et socio-économique sur les stocks de l'ethmalose, CRODT, USAID/COMFISH
	50. Etude sur la contribution socio-économique de la pêche artisanale dans l'économie des collectivités locales côtières : l'étude du cas de la commune de Cayar ; WWF USAID/COMFISH
	51. Formation du GIE «Dynamiques femmes de tanne» de Joal Fadiouth en organisation et dynamique communataire (ODC): Manuel du participant, USAID/COMFISH
	52. Guide pratique sur la surveillance participative dans la pêche artisanale, USAID/COMFISH
	53. Manuel de gestion administrative et financiere a l'usage des comites de coordination des CLPA dans le cadre de la gestion des ressources halieutiques, USAID/COMFISH
	54. Rapport de l'étude sur la mobilisation interne et externe de fonds pour les conseils locaux de pêche artisanale (CLPA), Abdou Séne, USAID/COMFISH
	55. Rapport de la réunion technique d'examen et de validation de la proposition de la mise en place du réseau des CLPA du Sénégal ; WWF, USAID/COMFISH
	56. Etude diagnostique des cadres de concertation déjà mis en place sur les changements climatiques, la pêche et l'environnement marin et côtier, DEEC USAID/COMFISH

	57. Convention locale pour une gestion durable des ressources halieutiques ; Conseil Local de la Pêche Artisanale de Kafountine, Région de Ziguinchor, Département de Bignona, Arrondissement de Kataba1, République du Sénégal, USAID/COMFISH
	58. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Ziguinchor, Région de Ziguinchor, Département de Ziguinchor, République du Sénégal, USAID/COMFISH
	59. Convention locale pour une gestion durable des ressources halieutiques : Conseil Local de la Pêche Artisanale de Saint-Louis: Région de Saint-Louis, Département de Saint-Louis, République du Sénégal, USAID/COMFISH
2015	60. Elaboration de documents de gestion de l'unité ameliorée de transformation des produits halieutiques du Groupement d'Interet Economique « Mantoulaye Guène » de Cayar, APTE
	61. Guide pratique de cogestion locale des pêches au Sénégal, ADEPA USAID/COMFISH
	62. La chaîne de valeur de la sardinelle pêchée au Sénégal, Consultants (Mbaye A.,Cissé I., Touré K ; Ba A. /ISRA, CRODT, IRD, ENSA)
	63. Manuel de gestion à l'usage des comites de gestion de salubrite des aires de transformation pour une meilleure adaptation au changement climatique, USAID/COMFISH
	64. Manuel de procédures d'autocontrole de l'Unité moderne de transformation des produits halieutiques de Cayar, A. Mbengue, NC.Ndiaye, USAID/COMFISH
	65. Plan d'Affaires de l'Unité de transformation de produits halieutiques du Groupement d'Intérêt Economique « Mantoulaye Guene » de Cayar, APTE USAID/COMFISH
	66. Suivi des Indicateurs de la performance des Conseils Locaux de Pêche Artisanale au Sénégal ; Mbaye A., USAID/COMFISH
	67. Plan d'Adaptation au changement climatique à l'échelle du Conseil Local de la Pêche Artisanale de Kafountine 2015-2020 ; République de Sénégal, CSE USAID/COMFISH
	68. Plan d'Adaptation au changement climatique à l'échelle du Conseil Local de la Pêche Artisanale de Saint-Louis 2015-2020 ; République de Sénégal, CSE USAID/COMFISH
2016	69. Test de sélectivité des engins utilisées dans la pêcherie de l'ethmalose (cobo), IUPA, USAID/COMFISH
	70. Plan National d'Adaptation du secteur de la pêche et de l'aquaculture face au changement climatique horizon 2035, Consultants, (Diouf PS., Diop N. Diop H.) USAID/COMFISH, octobre 2016
	71. Plan de gestion participatif de la pêcherie de sardinelle dans la Grande Côte Nord, Grande Côte Sud, le Cap-Vert, la Petite Côte et la Casamance, Consultant / USAID COMFISH
	72. Evolution de la perception des acteurs de Cayar et Joal de l'état de leur bien-être social, par Adama Mbaye, sociologue chercheur ISRA/CRODT
	73. Documentation de bonnes pratiques de pêche & Cartographie de la migration des pêcheurs, CSE, USAID/COMFISH
	74. Appui à la mise en place des Plans de gestion des petits pélagiques au Sénégal CRODT