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

Year Two Work Plan
(October 1 2011 – September 30 2012)

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By:

The University of Rhode Island (URI)

In Partnership With:

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United States Agency for International Development / Senegal
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World Wildlife Fund - West African Marine EgoRegion
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List of Acronyms

ACCC	Adaptation to Climate and Coastal Change in West Africa
AO	Agreement Officer (USAID)
AOTR	Agreement Officer's Technical Representative (USAID)
APTE	Association Fisheries, Tourism, and Environment (Association Pêche, Tourisme, et Environnement)
BRPs	Biological Reference Points
CCLME	Canary Current Large Marine Ecosystem
CDP	Piloting Comittee (Comité de Pilotage)
CLP	Local Fisheries Committees (Comités Locaux de Pêche)
CLPA	Local Councils of Artisanal Fishers (Conseil Local de la Pêche Artisanale)
CNCPM	National Consultative Council for Marine Fisheries (Conseil National Consultatif des Pêches Maritimes)
CONIPAS	National Fisheries Stakeholder Council (Conseil Interprofessionnel de la Pêche Artisanale au Sénégal)
CoMNAC	National Committee for Climate Change (Comité national sur la changement climatique)
COPEM	Council of NGOs and Pos active in the Marine Environment (Conseil des ONGs et OP actives dans l'Environnement Marin)
CRC	Coastal Resources Center
CRODT	Oceanographic Research Center - Thiaroye, Dakar (Centre de recherches Océanographiques de Dakar Thiaroye)
CSE	Ecological Monitoring Center (Centre de Suivi Ecologique)
CST	Scientific and Technical Committee (Comité Scientifique et Technique)
DAC	Department of Common Areas (Direction des Aires Communautaires)
DEEC	Department of the Environment and Classified Facilities (Direction de l'Environnement et des Établissements Classées)
DITP	Department of Fishery Processing Industries (Direction des Industries de transformation de la Pêche)
DPM	Department of Marine Fisheries (Direction des Pêches Maritimes)
DPN	Department of National Parks (Direction des Parcs Nationaux)
DPSP	Department of the Protection and the Monitoring of Fisheries (Direction de la Protection et la Surveillance des Pêches)
ENDA	Energy – Environment – Development (Environnement et Développement en Afrique – Energie)
FENAGIE	National Federation of Fishing Industry Economic Interest Groups (Fédération Nationale des GIE de Pêche)
GDRH	World Bank Sustainable Management of Fish Resources Project (Gestion des Ressources Halieutiques, Banque Mondiale)
ISRA	Agriculture Research Institute of Senegal (Institut Sénégalais de Recherche Agricoles)
ITA	Institute of Nutritional Technology (Institut de Technologie Alimentaire)
IUPA/UCAD	Dakar Institute of Fishing and Aquaculture (Institut Universitaire de Pêche et d'Aquaculture - Université Cheikh Anta Diop)
LPS	Fisheries and Aquaculture Sector Policy Letter of 2008 (Lettre de Politique Sectorielle élaborée en 2008)
MEM	Ministry of the Maritime Economy (Ministère de l'Economie Maritime)
MPA	Marine Protected Areas
MSC	Marine Stewardship Council

NAPA	National Adaptation Programmes of Action for Climate Change
PMP	Performance Management Plan
PRAO	World Bank-funded West Africa Regional Fisheries Program (Programme Régional des pêches en Afrique de l'Ouest de la Banque Mondiale)
URI	University of Rhode Island
UCNP	National Program Coordination Unit – USAID COMFISH (Unité de Coordination Nationale du Programme)
USAID	United States Agency for International Development
USG	United States Government
V&A	Vulnerability Assessment and Adaptation Planning
WAMER	West Africa Marine EcoRegion
WWF	World Wildlife Fund

1. Introduction and Background

The Collaborative Management for a Sustainable Fisheries Future in Senegal (*USAID/COMFISH*) is a five-year initiative (February 14, 2011 – September 30, 2016) supported by the U.S. Agency for International Development (USAID). It is implemented through a cooperative agreement with the University of Rhode Island (URI). Key implementing partners include WWF-WAMER, FENAGIE, ENDA, CSE, IUPA, APTE and other key government, private sector and nongovernmental organizations (NGO) stakeholders along the coast and in the fisheries sector.

The goal of the *USAID/COMFISH* Project is to support the Government of Senegal's efforts to achieve reform of its fisheries sector as mentioned in the Fisheries and Aquaculture Sector Policy Letter of 2008 (LPS, for the French "Lettre de Politique Sectorielle") by strengthening many of the enabling conditions necessary for improved governance and demonstrating effective tools and approaches for ecosystem-based collaborative management.

This document describes the activities proposed FY2012 for *USAID/COMFISH*, covering the period from October 1, 2011 to September 30, 2012.

The work plan is organized into five components. The first section provides background on the fishery context in Senegal. The second section describes the goals and key results expected during the course of the project, followed by a detailed description of activities to be implemented during this period. It includes a schedule for the implementation of different tasks and activities, annual targets and results in each activity area. For each respective activity area, the work plan also identifies the responsible project staff member(s) and participating partners. This will help guide teams involved in implementing activities.

Project activities can be grouped into four main areas:

- Capacity building in institutions and stakeholders at all levels of governance to improve the implementation of comanagement strategies that support the sustainable use of marine resources and prevent overfishing.
- Implementation of strategies and policies to eliminate the use of fishing techniques considered unsustainable or destructive to marine resources or to biodiversity conservation efforts, including management of responses to the impact of climate change on landings.
- Evaluation of vulnerability to climate change in coastal communities and strengthening the capacity of coastal communities to adapt to the impacts of climate change.
- The sustainable management of fisheries in order to increase the social and economic benefits of fisheries to fishing communities.

This work plan also includes a description of the project's management structure, communications, performance and reporting framework, and a summary of budget information. Appendix A is the performance management plan (PMP) for the project, which describes targets and results to be achieved for each performance indicator.

1.1 Situation analysis of the fisheries sector

1.1.1 The importance of the fishing sector for Senegal's economy and its food security:

Senegal's marine fisheries play a crucial role in food security, in the improvement of living conditions, in local and national economic growth and in the social well-being of communities. The fisheries sector (industrial and artisanal/traditional fishing combined) provides approximately (directly or indirectly) 600,000 jobs, which represents around 17% of the active population. The fishing sector produces 47% of the total protein and 70% of the animal protein that is consumed in Senegal. The export of fishery products totals nearly 37% of the total value of goods exported between 1997 and 2002.

1.1.2 Trends in the evolution of fishing effort, landings, and the state of fish stocks:

The number of registered pirogues has risen from 8,488 to 13,420 between 1980 and 2006, while the number of national registered industrial ships decreased from 176 to 119 between 1997 and 2006. The observed increase in artisanal fishing effort is likely due in part to the increase in coastal populations, the role of fishing as a livelihood of last resort, and difficulties throughout the agricultural sector. Although total landings (artisanal and industrial fishing combined) have remained relatively constant at around 400,000 tons per year for the decade up to 2004, artisanal fisheries played an increasingly important role in the supply chains as well as local and international markets, now providing 94% of fish, 63% of mollusks, and 25% of crustaceans landed in Senegal.

The near constant rate of landings in Senegal up to around 2006 does not immediately show the grave situation which many Senegalese fish stocks are now in. The seemingly regular landings mask an alarming situation similar to that in some other tropical, multi-species fisheries subjected to ever increasing fishing effort: at least ten important demersal species are probably overfished in Senegal. This situation is hidden by the fact that in cases where fishing effort for threatened species intensifies, there is an increase in by-catch. When all of the important species are overfished, a sudden drop in landings will occur, which could explain the situation in Senegal when landings dropped from 430,000 tons in 2004 to 340,000t in 2006 (a drop representing 20% in two years). This decrease in targeted species may be accompanied by overexploitation of non-targeted species. The fact that data on landings have not been collected or revised since then is worrying, and indicates that there may be no objective means to assess the current state of fisheries in Senegal. Anecdotal reports suggest that the decrease in landings from 2004-06 continued until 2010: if true this would be a serious threat to a principal source of protein for Senegal's population.

These data need to be set in the context of the changing importance of the Senegalese fishing sector, which provided 2.5% of GDP in 2005, 2% in 2006 and only 1.7% of GDP in 2009. Assuming that manpower in the fishing sector was constant at ≈15% (in fact it is likely to have increased as fishing is an occupation of last resort in Senegal), in 2009 the per capita GDP in the fishing sector will have fallen to (1.7/2.6) x 100 = 65% of the 2005 value, i.e. it would have declined by 35%. This estimate is comparable to the fall in landings of 20% from 2004 to 2006 and suggests that food security was also impacted. It is also noteworthy that the fishing sector (600,000 people, or 15% of the workforce) takes home around 2% of GDP while 85% takes home ≈98% of the GDP: clearly the fishing sector is relatively poor.[1]

[1] A more complete description of the fishery sector and its contribution to the Senegalese economy is being carried out in FY2012.

1.1.3 Key issues for the sustainable management of Senegal's marine fisheries:

Many of Senegal's fisheries are probably harvested at or beyond the level of effort needed to harvest maximum sustainable yield (MSY). If effort continues to increase on Senegal's coastal fish stocks, and if the marine ecosystems on which the Senegalese fisheries depend become more degraded by destructive fishing methods, the effects of climate change and perhaps pollution, pressures on local stocks will increase up to and even beyond the open access point (which may already have been reached in some instances). In effect, and in spite of serious commitment and work, the fisheries are broadly unmanaged in some cases. The Department of Marine Fisheries (DPM) is well aware of this management gap and has already initiated important projects to address this matter.

1.1.4 The importance of climate change in the management of fisheries:

In the international community, it is widely agreed that climate change – global warming in particular – constitutes a serious threat to fish stocks due to its effects on the growth, reproduction and migration of different species. FAO published an important document which identifies, on a broad scale, the impacts of climate change on food security.[2] This document concluded that climate change is very likely to impact fish landings and thus (i) revenues generated by fishing, and (ii) supplies of food provided by fishing.

Impacts of climate change on fish landings and fish supplies may also impact the fish processing, marketing, distribution and supply sector, including processing plants, chandlers, boat building and maintenance yards, carpenters and all those occupations which are linked to fisheries. Thus the GNP of the fishery sector as a whole may be impacted by climate change. DPM is aware of this issue and *USAID/COMFISH* will support DPM and its team in managing the impacts of climate change on Senegalese fisheries.

1.1.5 Possible medium term impacts of climate change on Senegalese fish landings and fishery sector GDP:

1.5.1.1 Climate change impacts on fishing communities: During the initial development of the *USAID/COMFISH* project, vulnerability and adaptation of coastal communities to physical threats associated with climate change was targeted by COMFISH's "climate change" component. These threats included, among others: coastal erosion, habitat loss, rising sea levels (expected to be from around 0.5 to 1 meter in the next 50 to 100 years), increasingly frequent marine storms, and an influx of salt water into ground water systems. Physical threats of this kind may seriously impact coastal populations: an assessment of the vulnerability of coastal communities to such impacts, and of strategies for adapting to them, was therefore included in the second and third years of the *USAID/COMFISH* project.

1.5.1.2 Direct effects of climate change on landings: As mentioned above threats associated with climate change in Senegal could have important short and medium term impacts which could be greater than those caused by e.g. sea level rise and increasing storm intensity. This possibility was not considered during the development phase of *USAID/COMFISH*. Therefore in Y2012 COMFISH will introduce a methodology for (i) identifying Senegalese stocks which are threatened by climate change (ii) managing the adaptation of these stocks to climate change threats.

[2] Report of the FAO Expert Workshop on Climate Change Implications for Fisheries and Aquaculture, FAO Fisheries Report No. 870, Rome, 7-9 April, 2008.

Fig 1, below, shows how climate change impacted the subtropical Bahraini shrimp stock. Climate change of this kind has been reported to affect many other stocks/fisheries, e.g. North Sea haddock and cod. Climate change could have impacted fish landings in Senegal in the same way: unless an assessment of the kind shown in Fig 1 has been carried out, the independent effects of climate change and effort increase cannot be separated, so that a fall in CPUE and landings caused by a combination of climate change and effort could be wrongly assigned to increasing effort. This could lead to scientists providing the wrong management advice.

Therefore, in FY2011 COMFISH identified a strategy for identifying fisheries and stocks which may already have suffered serious impacts from climate change, or which are likely to be impacted by climate change in the future. There is strong evidence of a marked increase in total effort in Senegal since at least the 1980s. Similar effort increases occurred simultaneously with well falling landings and global climate changes in the North Sea, the Arabian Gulf and in other parts of the world. Although climate change and its effects on fisheries has not yet been documented for Senegal it is most unlikely that climate change has occurred elsewhere without having at least some important effects in Senegal too. To succeed in this new but essential task in FY2012, *USAID/COMFISH* must dissect, for at least a few important stocks, the separate effects of excess effort due to excessive capacity from the independent effects of climate change: both of which can affect CPUE and so fishing revenues independently of each other. This will be done using well know tools used on other parts of the world, and applying them to available data on sardine, shrimp, groupers and other *USAID/COMFISH* priority species[3].

Potential impacts of climate change on Senegalese landings and food security include the following elements:

- Even small changes in mean water temperature ($\approx 1^0$C over 2-4 decades) could significantly affect the size and age composition, species distribution, and abundance of fish stocks; and thus the value of the landings they can support.
- Temperature has an influence on the geographical distribution of stocks and a direct effect on the location and timing of spawning events, which, in the long run, also affect the growth and survival of species with a high commercial value.
- In an overheated environment, tropical fish species could show an ecosystem shift and migrate toward the poles. Species currently fished in Senegal could move north toward Mauritanian or Moroccan waters, which would decrease the productivity of Senegalese fisheries.
- There is tangible evidence of a migration of Senegalese fishermen towards other fishing zones since around 1995. This migration, often attributed to excessive fishing effort in Senegal, could equally be a result of climate change, or perhaps a combined result of both overfishing and climate change.
- Varying climate can increase uncertainty in fish supply and landings.
- Climate change can also influence the seasonality of landings: this could have unforeseeable results on the livelihoods of Senegalese fishermen.
- General temperature changes expose vulnerable marine species to high levels of stress and disease, in particular if they occur during periods critical to the life cycle of the species. Thus increases in water temperature and salinity could combine to create conditions which favor the spread of pathogenic organisms.

[3] Sardinella; cobo (shad); shrimp; octopus; grouper and others (chosen in that order by the July Workshop covered in the Y2011 Annual Report).

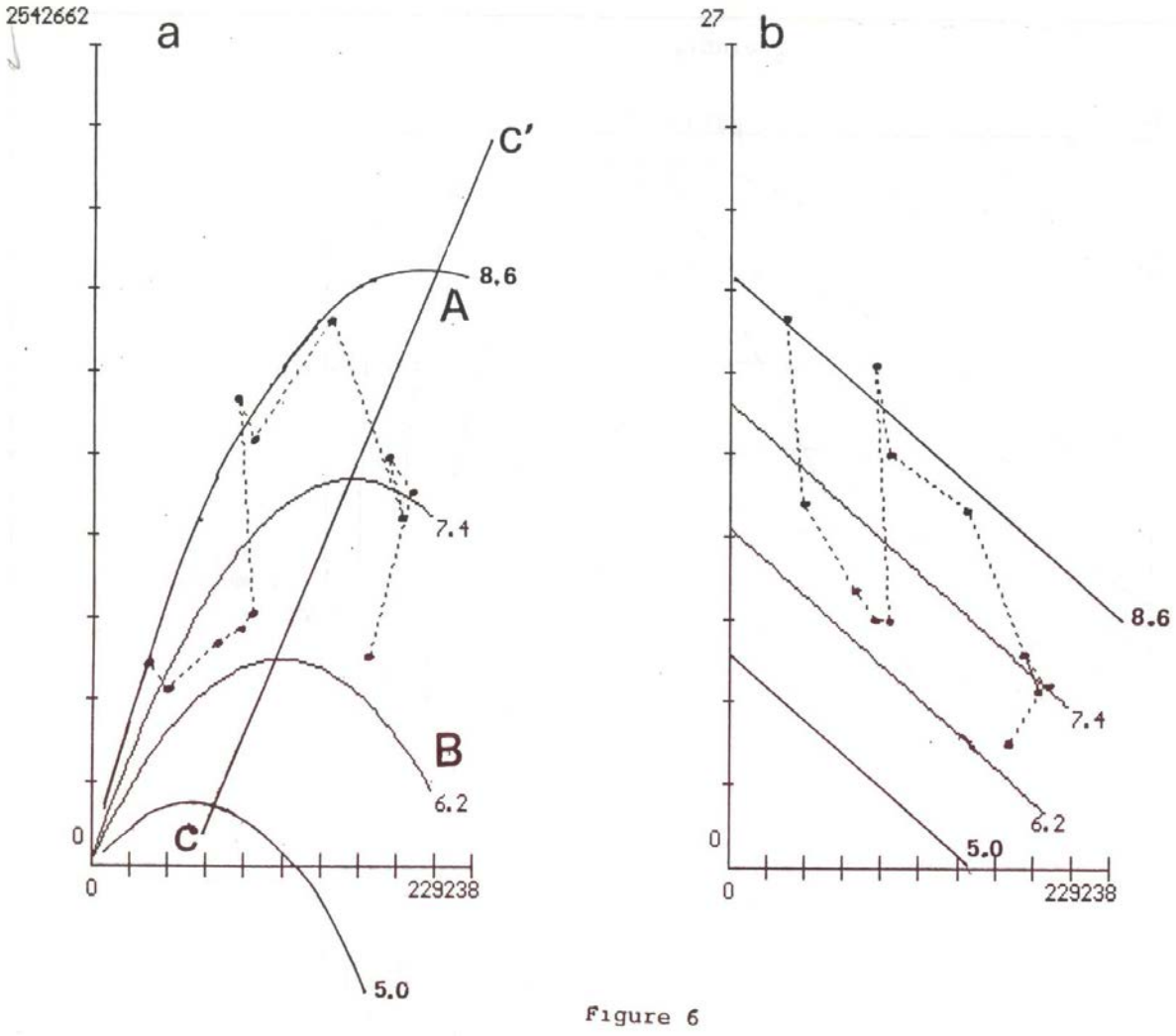


Figure 1:

(1a) X (vertical) coordinate: total shrimp landings, kg/year. **Y (horizontal) coordinate:** total effort in hours fishing/year. Numbers in the left hand panel indicate mean temperature above level which triggers massive spawning. Curve A shows high landings at high spawning temperatures (8.6^0C) and successively lower landings at lower spawning temperatures (B, C). The line C-C' identifies the way Maximum Sustainable Yield varies with spawning temperature.

(1b) X (vertical) coordinate: Catch Per Unit Effort (CPUE, kg/Hour) at the same spawning temperatures as in (a). **Y (horizontal) coordinate:** total effort in hours fishing/year (same as panel a). Note the CPUE declines as Effort increases at all spawning temperatures, but all CPUEs at a given effort are highest at 8.6^0C, and fall as spawning temperature decreases to 5.0^0C. Each line indicates a particular climatic condition and shifting of lines from high to low temperatures reflect response of the stock to climate change. Each line also shows falling CPUE with increasing effort: this is the response of the stock to excessive effort.

1.5.1.3 Assessing and managing the response of stocks to climate change in Senegal:
USAID/COMFISH will launch a fishery management strategy which includes identifying and managing the effects of climate change on landings. This work will relate the productivity of stocks (their capacity to produce fish) to independent changes in climate and effort. Results will support DPM (the designated fisheries management authority) to target and respond to a dynamic objective. U*SAID/COMFISH* will address these issues with partners including CRODT, IUPA, and technical teams at DPM.

Work on the effects of climate change on landings will be carried out at the same time as work on the evaluation of vulnerability and the planning of adaptation to reduce the impacts of climate change on coastal communities, originally visualized as *USAID/COMFISH's* only work on climate change and fisheries.

1.1.6 Incorporation of the Ecosystem Value Chain as a new element in Senegal's fishery management system:

USAID/COMFISH will also throw light on the some hitherto less well studied but very important aspects of sustainable management in Senegal by identifying a new and more complete "ecosystematic value chain". This will start with a traditional analysis of value chains for COMFISH's priority species, including additionally changes in the production of CO_2 in artisanal and industrial fisheries; and losses of information and power - specifically of women's power - at each link in the value chain. A one off "stand by" itself study will be carried out based on results of a seminal unpublished and incomplete study by IDEE Casamance and SIK[4] which concluded that 1.0Kg of shrimp taken by means of artisanal fishing produced only 14% of the Carbon Dioxide which was produced if the same amount of shrimp are taken by industrial fishing. Unfortunately the study did not fully refer to the total amount of fin fish and its value and importance: fin fish provide over 90% of all industrial landings, while the artisanal shrimp are taken with negligible amount of fin fish. The great majority of finfish caught in the industrial fishery is now believed to be used for human consumption in Senegal so that it is necessary to include the amount of protein added along the artisanal and industrial pathways in the study: this will provide a more comprehensive way of estimating the importance of industrial landings as a source of protein. Costs and benefits from managing the fishery so as to produce more fin fish and protein can then be objectively balanced with the benefits from managing the fishery for shrimp only. Until this is done DPM cannot identify the appropriate balance between artisanal and industrial boats in the fishery.

Therefore *USAID/COMFISH* will repeat the study using the same team to confirm the work in a more comprehensive manner. COMFISH will also ensure that a team of Senegalese scientists will learn to use the software and the full methodology which the previous team did not transfer successfully to Senegal. This will ensure that DPM will have at its disposal a team who can periodically update the estimates of total CO_2 pollution which will allow it to manage the ecological footprint of Senegalese fisheries, as one option in its set if fishery management capabilities. This may be a particularly important option for managing the correct balance of artisanal and industrial boats in the fishery.

[4] See Project Management Section for details about these new partners.

1.1.7 Implementation in Senegal of a fully sustainable fisheries management strategy:

Implementation of the activities outlined in previous sections will require:

- The development of a plan to manage fishing capacity in Senegal that incorporates adaptation to the impacts of climate change as well as efforts on captures per unit of effort (CPUE)
- Identification of several sites where important threats to coastal communities can be identified
- The development of models which distinguish effects associated with excessive effort from those associated with climate or environmental changes, with fish production, and with CPUE
- Development of the new "ecosystem value chain" approach
- The development of an action plan for an integrated information system for fisheries that includes all of Senegal, in order to accomplish the steps listed above. Work on integrated data bases will not be carried out by COMFISH but the proposed Sea Grant based "*Partenariat*" (Partnership) which COMFISH, IUPA and CRODT will carry out under the auspices of DPM (see section 4.1.5 below) will assist DPM to coordinate this action as one of the main Government of Senegal inputs into the scientific infrastructure needed to support sustainable fisheries management
- All of the above are required to support COMFISH's main work which is the *scientifically informed sustainable management of Senegal's artisanal fisheries*, using the bottom upwards management approach espoused by DPM in the 1998 Fisheries Law and in its Fisheries Sector Policy (LPS)

1.1.8 Bottom Upwards Co-Management of Senegal's artisanal fisheries -- response of the Senegalese Government to sustainability issues faced by the fishing sector:

Recently, the Government of Senegal developed a strategy for implementing the Fishing Code of 1998: this law anticipated the current need for fishing communities to form legally recognized associations, known under the name Local Fisheries Committees (CLPs, for the French "*Comité Local de Pêche*"). These CLPs negotiate agreements with fishermen and/or other CLPs which, when approved by the Minister of the Maritime Economy, become legally binding contracts. These agreements are called "*Conventions Locales de Peche*" and are used to develop and to implement comanagement initiatives for targeted fisheries. The Minister ratifies these initiatives through a Decree which may include e.g. minimum mesh size in fishing nets, closed periods, establishment of protected areas, closed seasons, and other control measures. The Minister has also formed Local Counsels of Artisanal Fishers (CLPAs, for the French "*Conseil Local de la Pêche Artisanale*"), to develop management plans for larger coastal fishing zones, and to coordinate and group the comanagement initiatives made by the CLPs. However, the CLPAs are too small to include any of the unit stocks and the fisheries they support, which need to be managed so that all of the effort on each unit stock can be managed. Therefore COMFISH has introduced and DPM has in principle accepted the concept of "*Unite de Gestion Durable*" (UGDs, i.e. stock based sustainable management units) to focus attention on FMPs (Fishery Management Plans) and the Conventions Locales (CLs) needed to implement FMPs[5].

COMFISH will support DPM's important management measures based at the village level, including CLPs, CLPAs and the application of Conventions Locales between CLPs, CLPAs, DPM/MEM and

[5] CLs may also be referred to as "Local Codes".

the combination of these structure into *Unites de Gestion Durable,* each of which will develop (with help from COMFISH and its partners), its own stock specific Fisheries Management Plan. All of this institutional and technical work is targeted to implement DPM's overall strategy for sustainable bottom upwards management of Senegalese fisheries as laid out in the LPS.

Work being targeted by *USAID/COMFISH* includes plans mentioned in the LPS for supporting economic growth in Senegal by improving the conditions necessary to attract investments, to develop commerce and to increase wealth though improvements in the management of the fishery sector. The USAID Program "Feed the Future" (FTF) was established to support the Government of Senegal in its effort to reduce poverty in the fisheries. *USAID/COMFISH* is the "Fisheries Component" of the FTF Program, and will contribute to these goals by emphasizing sustainability and the productivity of marine ecosystems, minimization of post-capture losses, increase of international commerce using eco-labeling, and the effective incorporation of stakeholders (men and women) in the artisanal fisheries value chain.

In 2005 USAID showed that overfishing and destructive fishing techniques are major threats for marine biodiversity in Senegal and particularly for demersal stocks that make up a significant amount of the country's exports. Therefore COMFISH will also support locally based comanagement measures needed to conserve and enhance biodiversity in Senegal's marine ecosystems and fisheries.

2. Objectives, Expected Results and Project Strategies

The goal of USAID Senegal is to support the Government of Senegal in their effort to reform the fishing sector to comply with the Fisheries and Aquaculture Sector Policy Letter of 2008 (LPS): this commits DPM to ensure a continued supply of fish and of fishery based revenues, so as to guarantee food security for Senegal's rapidly expanding population. *USAID/COMFISH* will support DPM through conserving biodiversity, empowering comanagement, and improving governance, including through supporting equality between the sexes and adaptation to climate change.

USAID/COMFISH will assist DPM in developing a sustainable management plan for the artisanal fishing sector. Due to the fact that most marine resources are shared between Senegal and neighboring countries in the Canary Current Large Marine Ecosystem (CCLME) zone, steps will be taken to help harmonize the governance of artisanal fisheries at a sub-regional level, although all COMFISH activities will take place in Senegal. This is particularly important for the sardinella fishery which provides 70% of artisanal landings, and which was chosen both by DPM and by the July 22-24, 2011 Fisheries Workshop (see Annual Report for FY2011) as Senegal's priority marine fish stock. *USAID/COMFISH* accepted this selection with the important caveat that, for this species, the stock based UGD and its Fishery Management Plan will cover the whole West African Region: sardinella are migratory and are fished in at least five West African countries, all located in the CCLME. Therefore *USAID/COMFISH* will assist DPM in providing a detailed fishery description of the Senegalese segment of the West African fishery so as to allow Senegal to defend its interests through supporting a regional Fisheries Management Plan (FMP) for sardinella which will allow sustainable management of the Senegalese segment of the regional stock. Thus COMFISH will conduct a detailed in depth desk study based in Senegal covering Senegalese and CCLME sardinella stocks, including a review of all data available from Senegalese partners from ca1950 to the present. These data will be used to model the Senegalese sardinella fishery. Results will inform Senegalese management of its artisanal sardinella stock.

The long-term objective (20-30 years) of the *USAID/COMFISH* project is that Senegal's fisheries are no longer overfished and provide (1) a sustainable source of high-quality animal protein for the

country, (2) in such a way that fisheries contribute to the quality of life for artisanal fishing communities while (3) maintaining the capacity of coastal and marine ecosystems to produce goods and services needed and wanted by the Senegalese people.

The project concentrates its field activities in the focal zones circled on the map below:

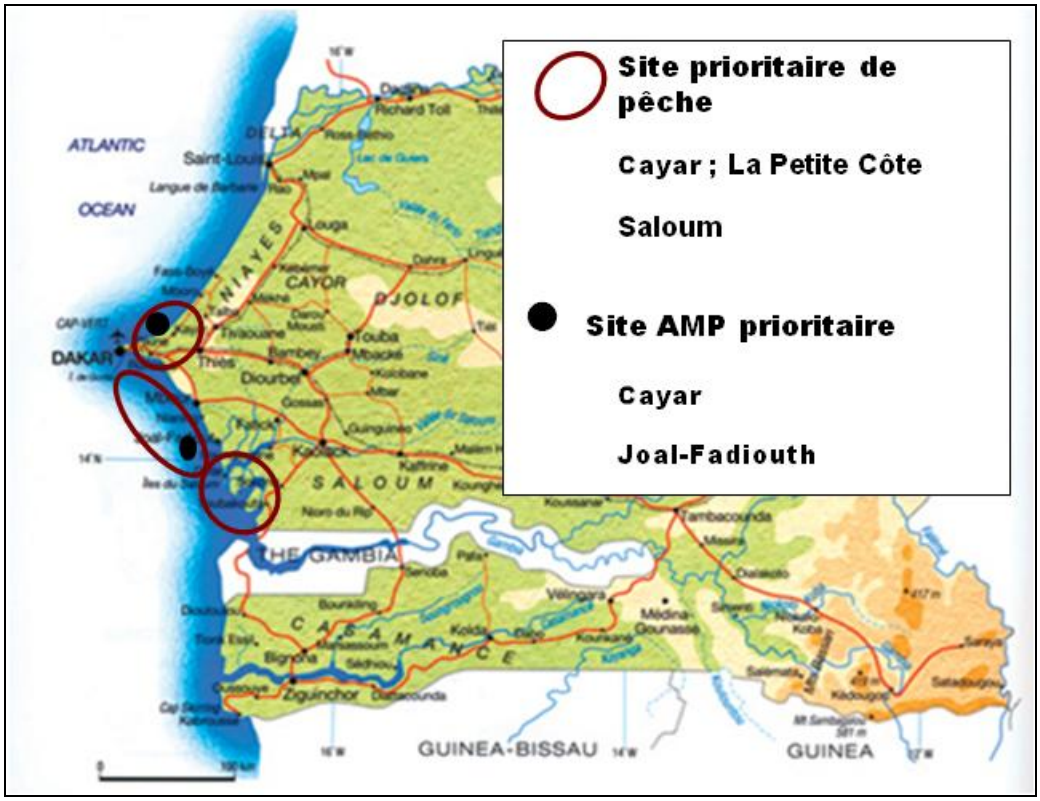


Fig 2: Map of the project's priority zones

3. Principal Results and Progress Indicators

The *USAID/COMFISH* project targets the following four goals:

- The capacities of institutions and other stakeholders will be strengthened at all levels of governance in order to implement a comanagement strategy for the sustainable management of fisheries;
- Strategies and policies to eliminate the use of fishing techniques considered destructive or unsustainable for marine resources or for the conservation of biodiversity will be tested and applied. This work will include the new task of identifying stocks which are vulnerable to climate change: destructive levels of gear can then be adjusted to adapt each impacted stock to destructive effects of (i) climate change (ii) excessive effort.
- The evaluation of the vulnerability of coastal communities and identification of adaptation strategies designed to protect them from impacts of climate change;

- Increased social and economic benefits to fisheries and fishing communities.

The identified annual results include the following:

Project results	**Expected results for year 2**
1. The capacity of institutions and stakeholders are strengthened to allow for the implementation of a coman-agement plan	• A strategy to strengthen the capacity of CLPAs is developed and its implementation is supported; • The role and the mission of CLPAs in comanagement practice is strengthened;
	• A cooperation framework and dialogue are established at the level of the villages or fishing zones throughout the "Alliance" between comanagement organizations to improve the adherence to local conventions in preparation for the implementation of management plans;
	• A strategy to strengthen the power of women in the sector is developed and its implementation is supported;
	• Exchanges between fishing communities are encouraged at a national level;
	• Members of Professional Organizations and project partners attend a leadership training session;
	• The information system, the exchange of information and communication on fisheries, the capacities of stakeholders, NGOs and institutions collecting data are strengthened through the IUPA; • The establishment of a system to exchange information between scientists, fishermen and administrators that participate in the development of fishery management plans is supported (US Sea Grant model). • A national Partnership procedure to facilitate the exchange of necessary information and data between institutions involved in the development and evaluation of marine stocks in Senegal is established; • The implementation of a process to identify the problems related to the fisheries information system is supported; • Two representatives from the Administration are sent to the University of Rhode Island to continue their higher education on population dynamics and the economy of marine fisheries; • An exchange visit is organized in the United States for four members of the Partnership Coordination Council (DPM, CRODT, IUPA and professionals in the fishing sector).
	• The results and recommendations from the workshop on the management measures related to the evaluation of priority stocks are published and discussed at the level of the CLPAs.
2. Strategies and policies to eliminate the use of tech-	• Biological and ecological data on the sardinella, shad, shrimp, thiof and other priority species is produced;

Project results	Expected results for year 2
niques considered destructive or unsustainable for marine resources or marine conservation efforts are tested and applied	• The dynamics of sardinella populations in the northwestern Africa is better understood; • The spatio-temporal variability of the coastal environment in West Africa is better understood; • The key environmental factors influencing the dynamics of sardinella stocks in West Africa are determined; • A draft management plan for sardinella is finalized in three CLPAs; • Socioeconomic studies are conducted to support the implementation of plans to develop the coastal shrimp fishery initiated by the Department of Fisheries.
	• Protocols are signed to create synergies and collaboration strategies between programs and partners in the field;
	• Scientific data on priority species /stocks is increased to support the development of local conventions and the implementation of management plans for resources and fishing capacity;
	• CLPAs are supported in their efforts to create a map of the fishing zones and sites to improve the development of local conventions;
	• CLPAs in Joal, Mbour and Sindia are supported in the negotiation and development of three local conventions for the sustainable management of marine resources;
	• A workshop on MSC for fishery administrators in Senegal is organized (if prior study indicates it is needed, and DPM supports this activity);
	• A strategy and a training plan for MPA administrators are developed; • The borders of the Cayar MPA are defined; • The development of ecotourism as an alternative activity to support the management of the Joal-Fadiouth MPA is endorsed; • Biological and socio-economic indicators of governance are determined to monitor and evaluate the effectiveness of MPAs as a tool for the management of marine resources;
	• Stocks/fisheries which are vulnerable to climate change are identified and DPM is informed of options for managing the adaptation of these fisheries to climate change
3. The planning of the evaluation of vulnerabilities and the adaptation to climate change is completed	• The capacities of trainers and stakeholders on question related to climate change are strengthened at the national level and in the six CLPAs targeted by the project; • Evaluations of the vulnerability of coastal communities are conducted; • Adaptation strategies to the impacts of climate change are developed and an action plan is drawn up by the communities with support from the project; • Discussions are led with the MEM and the ME on the

Project results	Expected results for year 2
	necessity to integrate issues related to climate change in policies in the fishing sector;
4. The sustainable management of fisheries supports the increase in the social and economic benefits of fisheries for fishing communities	• Studies on the value chains of sardinella and coastal shrimp are conducted;
	• The processing unit of Gie Manetoulaye Guène is redeveloped and equipped to comply with required norms; • Constraints associated with proper processing practices are understood and improved; • Training session on hygiene and quality, literacy, and leadership are organized.
	• A state of reference study on the perceptions of stakeholders on the state of their social well-being is conducted.

These results will contribute to the Global Climate Change (GCC) Initiative, Feed the Future Initiative, and the Biodiversity Earmark of the United States Government.

The results of *USAID/COMFISH* will contribute directly to the Objectives of Improved Management of Natural Resources and Inclusive Growth in the Agriculture Sector of the Economic Growth of the USAID/Senegal.

4. Second Year Activities

4.1 Building institutional and stakeholder capacity

The unsustainable use of marine and coastal resources has led to a decrease in catches and landings, to a degradation of resources and to an increase in poverty levels in coastal communities. These changes have resulted in a decrease in the role of fisheries in the national GDP, which has dropped from 2.5 % to 1.3 %, as well as a significant loss of marine biodiversity.

Today, all stakeholders agree on the fact that the State cannot singlehandedly respond to the many concerns that are currently threatening the sustainability of fisheries. Management institutions, professional organizations (POs), research and training organizations, non-government organizations (NGOs), and other partners in development, aware of the role that they can play in the search for solutions to the problems faced by the fishing sector, are increasing their action in the domain. Nevertheless, the capacities of these institutions and stakeholders must be strengthened before they can fully participate in this process.

Through an important program aimed at building capacity in all levels of governance (including critical technical capacity at CRODT, IUPA and DPM), the *USAID/COMFISH* project is looking to support the Local Artisanal Fishing Counsels (CLPA, for the French Conseil Local de Pêche Artisanale) in their efforts to monitor and control fishing activities and to create management and development plans for local fisheries. In order to improve planning and to increase financial resources, CLPA capacities will be strengthened while improving their relationship with the territorial and central administration. Furthermore, it is expected that in this process, the strengthening of the capacities of professional organizations and other stakeholders (fishermen, women working in processing, fishermen associations, etc.) will help these groups gain the strength they need to defend their interests in greater decision-making processes.

At the same time, the *USAID/COMFISH* project will work to strengthen the national research and training organizations as well as NGOs and other stakeholders in an effort to improve the fisheries information system.

4.1.1 Institutional capacity creation:

This involves increasing the capacity of fisheries management institutions and their human resources to (i) participate in a sustainable comanagement strategy (ii) manage the access to resources (iii) reduce fishing effort when stocks are over-exploited (iv) reduce effort when stocks are impacted by climate change.

The goal of improving local fisheries governance also includes improvements in the ability of comanagement organizations to manage local resources in a way that is both transparent and sustainable. This will involve melding CLPs, CLPAs into UDGs, the creation of biologically sound FMPs, their annual implementation, and the well-known process of annual revision and further implementation of FMPs which leads towards successful sustainable management.

Fisheries management plans must be designed and implemented using a participatory approach. This gives fishermen control and involvement which motivates them to support sustainable management. For this to happen, an effective comanagement foundation must be in place, including: (i) CLPAs (ii) a functional fisheries administration with increased power (iii) an adequate working knowledge of comanagement strategies in all stakeholders (iv) the ability to develop sustainable management plans targeting key species (v) popularization of sustainable management plans.

It is also important to identify sustainable financing plans for local comanagement institutions (CLPAs as well as others) in order for these institutions to have the power and the resources necessary to accomplish their goals and responsibilities, which include the planning and implementation of local proceedings and surveillance systems.

During Y2012 *USAID/COMFISH*, in collaboration with the DPM and other projects and programs working in this field, will develop and implement a global strategy to build CLPA/UGD capacity. Extra attention will be paid to the strengthening of the role and the mission of CLPAs in the implementation of comanagement plans. This will include support for the distribution of legislative texts and regulations, for the management of fishing effort, and for implementation of a sustainable financing mechanism for CLPAs, among others.

4.1.2 Building capacity for fishermen and women involved in the fishing industry, and fishermen associations:

This is crucial for these stakeholders to gain the power necessary to encourage and support the use of sustainable and responsible techniques in fisheries. An effective fisheries management plan should place fisher people at the heart of the reforms and create feelings of ownership in the new management practices. To help stimulate this appropriation of ownership, different parties involved in the process must recognize and share their experiences and their needs, and must take responsibility for the management process and its results. Due to the fact that comanagement and the regulation of fisheries access are relatively new strategies in Senegal, it is necessary to document the process and the progress obtained, and to emphasize communication and transparency to ensure confidence.

Particular attention must be given to the strengthening of women in the fishing sector. Although women are underrepresented in decision-making organizations in most communities, they make up an

important part of the processing of fisheries products. They also have a large role in the education of children, as well as the health and well-being of the entire family. During Y2012 a strategy to help strengthen the power of women will be developed. This strategy will be based on the recommendations of the project study on "the evaluation of the role of women in fishing communities and CLPAs", and on the identification of methods to strengthen their involvement in the decision-making process and to increase the profits they receive from the fisheries sub-sector. A Gender Strategy will be prepared with advice from international and local experts at a Gender Management Workshop.

This strategy will be gradually implemented throughout the duration of this project. A certain number of activities will be developed to allow stakeholders to exchange and share experiences and to suggest sustainable resources management techniques in project sites.

4.1.3 Building capacity in professional organizations and fishery management institutions and supporting an effective communications framework.

In order to respond to the fisheries crisis, it is essential to combine the efforts of all stakeholders in the sector. To accomplish this, under the leadership of the WWF and the Ministry of the Maritime Economy, the inaugural General Assembly was held of "The Alliance for Sustainable Fisheries in Senegal (the "Alliance").

The Alliance brings together the technical services of the MEM, its partners in development, the socio-professional fishery organizations, and NGOs (national and international) active in the management of marine resources in Senegal. During the FY 2011 *USAID/COMFISH* supported the official recognition of the Alliance and the implementation of activities listed in the Alliance's action plan. This support will be continued in FY 2012. In *USAID/COMFISH* framework, the Alliance, through its members, plays an important role in supporting and implementing project activities. The contribution of the Alliance in the *USAID/COMFISH* project framework will be to:

- Speed up implementation of *USAID/COMFISH* and DPM activities over the long term, specifically activities related to the CLPAs and the UGDs;
- Inform and increase awareness of the authorities on the management measures considered by civil society and key stakeholders as the most important for *USAID/COMFISH* project and to support their implementation;
- Play an important role in communication and cooperation, facilitating the implementation of *USAID/COMFISH* project activities and the distribution of results for their adoption by the members of the Alliance.

4.1.4 Strengthen leadership capacity in professional organizations and in management institutions

In addition to these activities, and in order to allow fisheries stakeholders to better defend their interests in decision-making processes, the project will develop a new project component to help train key fishery players**.** This component will organize a leadership training program for key players in professional organizations, and will involve representative from each of the partners in a leadership training session at the University of Rhode Island (representatives will be designated by the institutions: DPM, COPEM, CRODT, IUPA, etc). The goal of this leadership seminar is to exchange experiences, ideas and methods related to the gathering and exchanging of scientific knowledge and to combine this understanding with the knowledge of local fishermen in efforts to improve

management and decision-making processes in fisheries. Other information-sharing techniques will be studied, including radio, video, workshops, exchange visits, meetings, and small working groups.

4.1.5 Establishment of a Sea Grant style of partnership – the "PARTENARIAT" - as a new program involving marine research, education and awareness building in marine fisheries:

The current evolution of marine research conditions in Senegal – which should be the basis of all marine management – is strongly affected by a lack of real coordination between universities and government research institutes on the one hand, and the fishers and their stakeholder organizations on the other hand. This lack of coordination limits the capacity of marine research organizations to respond to all of the requests made by management institutions, including especially CLPs and CLPAs. To respond to this problem, the *USAID/COMFISH* project plans to implement in the upcoming year a similar model to the American "Land Grant/Sea Grant" program, in order to facilitate scientific collaboration and cooperation between administrative institutions, the fishing industry, and scientific organizations through the University Institute of Fisheries and Aquaculture (IUPA, for the French "*Institut Universitaire des Pêches et d'Aquaculture*") of the University of Cheikh Anta Diop in Dakar (UCAD).

This coordination program will be established through a partnership (PARTENARIAT) between the Department of Maritime Fisheries (DPM, for the French "Direction des Pêches Maritimes"), IUPA, and the Center for Oceanographic Research of Dakar Thiaroye (CRODT, for the French "Centre de Recherches Océanographiques de Dakar Thiaroye"), representatives from different sectors in the fishing industry and representatives from the *USAID/COMFISH* project. This partnership will create a connection between the three branches often involved in fisheries management: research and science, the Government, and the fishing industry. This partnership will also help establish an effective strategy to facilitate the necessary exchange of results and information in order to carry out the stock assessments necessary for the management of Senegalese marine resources. A Coordination Council will be created to organize, coordinate and execute the activities of the partnership. This Council will include:

- Three (3) representatives from the DPM
- Two (2) professors/researchers from the IUPA
- Two (2) scientists from the CRODT
- Two (2) artisanal fisheries representatives
- One (1) industrial fisheries representative
- One (1) representative from the marine products processing industry
- Three (3) honorary representatives/observers (with the right to speak but not to vote) from the *USAID/COMFISH* project

The Council will be presided over by the Director of the DPM or his delegate and will ensure fair proceedings as well as the full participation and contribution of the CLPAs and other NGOs. COMFISH will (i) participate as an advisor, (ii) provide administrative support in the initial process of development (iii) support the execution of research in the areas identified by the Coordination Council. COMFISH will encourage the Council to hold periodic meetings to evaluate progress.

4.1.6 Results of the year for institutional capacity building:

- A strategy to build capacities in CLPAs is developed and its implementation is supported;
- The role and the mission of the CLPAs in comanagement is strengthened;
- A coordination and communication framework is established between comanagement organizations at the level of the villages and fishing zones throughout the Alliance in efforts

to improve the support for local conventions and to prepare for the implementation of a management plan;

- A strategy to strengthen the power of women in the fishing sector is developed and its implementation is supported;
- Exchanges between fishing communities are promoted at a national and an international level;
- An information-sharing and communication system for fisheries, as well as the capacities of all stakeholders, NGOs and institutions collecting data are strengthened through the IUPA;
- The implementation of a system to exchange information and knowledge between scientists, fishermen and administrators involved in fisheries development is supported;
- A national partnership process to facilitate the exchange of results and information needed by the institutions involved in marine stock assessments in Senegal is established;
- The implementation of a procedure to identify problems related to the fisheries information system is supported;
- The results and recommendations on management measures from the workshop on the evaluation of priority stocks are published and discussed at the level of the CLPAs;
- Two representatives from the Administration are sent to the University of Rhode Island to continue their higher education in the fields of population dynamics and the economy of marine fisheries;
- A exchange visit is organized in the United States for four members of the Coordination Council of the Partnership (DPM, CRODT, IUPA and professionals from the fishery sector);
- The leadership capacities of professional organizations are strengthened.

Timetable:

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
Building CLPA capacities in project zones							
Organize a national meeting to validate the report evaluating CLPAs, to identify needs and priorities in CLPAs and to develop a strategy to strengthen capacities in CLPAs	X				WWF, DPM, BM, CLPA Local communities, decentralized authorities	Chris/ Vaque/ Niane	None
Support the implementation of the strategy to strengthen CLPA capacities		X	X	X	WWF, DPM, BM, CLPA Local communities, decentralized authorities	Vaque/ Niane	None
Strengthen the role and the mission of the CLPAs in comanagement plans (support the distribution of legislative texts and regulations as well as documents related to the sustainable management of marine resources)		X	X		WWF, DPM and partners	Vaque/ Niane/ Frédéric	None
Strengthen capacities in CLPAs and other organizations involved in comanagement in the application of comanagement strategies (management of fishing efforts, access to resources, development of management plans, etc)			X	X	WWF, DPM and partners	Vaque/ Niane/ Frédéric	None
Support CLPAs and other organizations involved in comanagement in their efforts to implement a sustainable financing mechanisms to properly fund their activities			X	X	WWF, DPM, APTE, FENAGIE, COPEM, Col. Local populations and partners	Vaque/ Niane	None
Strengthen the involvement of local communities in the financing of CLPAs			X	X	WWF, DPM, local communities and partners e	Vaque/ Niane/ Frédéric	None
Building capacity in fishermen, women involved in the fishing industry, and fishermen associations							
Organize a national meeting to develop a strategy to build capacity in women involved in the fishing industry		X			DPM, WWF, APTE, FENAGIE, COPEM et partners	Khady/ Vaque/ Niane/ Frédéric	Madeleine

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
Support the implementation of the strategy to build capacity in women in the fishing industry		X	X	X	WWF, APTE, FENAGIE, COPEM and partners	Vaque/ Niane/ Frédéric	None
Organize meetings between fishing communities to exchange and share experiences in matters related to sustainable resource management in project sites		X	X	X	WWF, APTE, FENAGIE, COPEM and partners	Vaque/ Niane	URI/FC/ Castro
Building capacity in professional organizations and fishery management institutions							
Strengthening leadership capacities in professional organizations at a national level		X	X		COPEM, FENAGIE, APTE and partners	Khady/ Vaque	None
Strengthening leadership capacities in the DPM and other partners			X		DPM, CRODT, IUPA, COPEM and partners	Chris/ Vaque	CRC/FC Castro
Analyze the recommendations given in the studies on the functionality of CLPAs and UGDs, inform and build awareness in authorities to help facilitate the adoption of the recommendations considered the most important by the *USAID/COMFISH* project and the Alliance	X	X			WWF and partners	Chris	None
Support the organization of coffee talks on themes of communal interest for the *USAID/COMFISH* project, the Alliance, the WWF, APTE the GRTP and the DPM.	X	X	X	X	WWF and partners	Chris/ Vaque	None
Support the functioning of the Alliance	X	X	X	X	WWF and partners	Chris/ Vaque	None
Build capacities in national management, research, and training organizations, as well as in NGOs and other stakeholders in efforts to improve the information-sharing and communication system between all organizations involved in marine fisheries							
Support the implementation of a process to identify problems related to the current fisheries information system (data on stocks, research priorities, etc.)	X	X			CEP, WWF CRODT, IUPA, DPM	Chris	Najih
Identify the role of each partner and develop the terms of reference for the activities of each organization	X				CEP, WWF CRODT, IUPA, DPM	Chris	Najih
Designation of members for the Coordination Council by each of the different organizations	X				CEP, WWF CRODT, IUPA, DPM	Chris	

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
Organize the first meeting of the Coordination Council to review the work plan for 2012: Policy Alternatives Workshop to identify MEM/DPM's strategic management needs		X			CEP, WWF CRODT, IUPA, DPM	Chris	
Develop qualification criteria and announce the availability of two scholarships for a Master's of Science in Fisheries Economics and in Population Dynamics	X				CEP, WWF CRODT, IUPA, DPM	Chris	Najih
Organize a second meeting of the Coordination Council to identify the research themes for the IUPA students and to define the activities for a program to build awareness of and promote these research themes		X			CEP, WWF CRODT, IUPA, DPM	Chris	
Organize a workshop on stock assessments using available data on selected species			X		CEP, WWF CRODT, IUPA, DPM	Chris	Najih
Organize the Second local meeting of the Coordination Council to review the conclusions of the stock assessment Workshop				X	CEP, WWF CRODT, IUPA, DPM	Chris	
Publish the workshop conclusions and discuss the workshop recommendations in a series of public meetings at the level of the fishing zones chosen by the Coordination Council in the project intervention zone				X	CEP, WWF CRODT, IUPA, DPM	Chris	Najih
Organize an exchange visit in the United States in different colleges involved in the Sea Grant/ Land Grant program for four members of the Coordination Council (DPM, IUPA, CRODT and professionals from the fishing sector)				X	CEP, WWF CRODT, IUPA, DPM	Chris	Najih
Strengthen leadership capacities in the DPM and partner organizations involved in the fisheries			X		WWF, CRODT, DPM	Khady/ Chris	

4.2 Strategies and policies to eliminate the use of destructive and unsustainable techniques for marine resources and for biodiversity conservation

During FY2011, *USAID/COMFISH* attended many meetings which showed a consensus that, in spite of the large number of donor projects working in fisheries, there was a continued degradation of the marine environment and the fishing communities and fisheries which it supports. It was generally agreed that (i) most fish stocks were overfished, (ii) CPUE and fisher incomes were falling, (iii) insufficient stock assessment advice was made available to DPM so that it was not possible to formulate scientifically informed management strategies, (iv) bio-economic modeling using

international methodologies (including FAO/s 1999 plan for creating capacity management plans), (v) studies of the effects of climate change of fish stocks, landings and food security, were all needed to support DPM's implementation of the LPS. Therefore, in FY2012 COMFISH and its partners will support DPM by carrying out this work on priority stocks, including the important work on sardinella mentioned above. All of this work will target, directly or indirectly, creation of scientifically informed FMPs which will support UGDs in managing key stocks and fisheries. Specifically, U*SAID/COMFISH* will support fisheries management planning for sardinella, shrimp, grouper, shad and octopus all in partnership with other donor projects, government, fisheries organizations, local communities, fishermen and fisheries stakeholders.

Stakeholders also agreed generally that they should work in synergy and harmony with each other. During FY2012, *USAID/COMFISH* will coordinate activities with partners and projects which are also working in marine ecosystems, so as to synergize fisheries management activities.

4.2.1 Developing fisheries and establishing institutional synergies:

CLPAs will be supported in their implementation of local conventions, which will be created to FMPs for priority species (sardinella, ethmalosa, shrimp, grouper). The project will focus specifically on the assessment of the state of management plans for priority stocks such as the sardinella and shrimp. A biological and socio-economic study of the sardinella fisheries in Senegal and in the Sub-region will be conducted. This research activity will identify environmental/climatic impacts on the West African sardinella stock. Biological data on sardinella will be used to model the fishery and to provide management advice. Modeling of chronological series, statistical correlations, and linear and non-linear models will be used to relate environmental variables and landings. This will support analysis of the role of the fluctuations in the physical environment on the seasonal and interannual variability of sardinella populations. Results will be used to determine the vulnerability of coastal fishing communities to variations in landings caused by excessive Senegalese and West Africa, and to support DPM in identifying a sustainable management strategy for coastal sardinella fisheries (which provide >70% of artisanal catches).

Although the project is planning to focus on only one or two species in its FY2012 participatory management plans, studies will be conducted on a group of priority species selected in the first year so as to provide the biological foundation for similar participatory management plans in Y2013.

The geographic information systems (GIS) database started in the first year will be progressively added on to and eventually completed, at which time it will be made available to all stakeholders and especially to those working in UGDs.

4.2.2 Eco-certification program through the Marine Stewardship Council (MSC):

USAID/COMFISH is committed in principle to support the international eco-certification sponsored by the Marine Stewardship Council (MSC) for chosen stocks. However, Senegal has already initiated the MSC eco-certification process by carrying out a strong bio-economic assessment and by constructing a carefully drafted FMP for deep sea shrimp, supported by an MSC team which is reportedly in the process of assisting Senegal to identify a national eco-certification policy. Therefore, *USAID/COMFISH* will recruit a local expert to investigate and report comprehensively on all DPM and other eco-certification work already carried out in Senegal. This report will be used by COMFISH to identify areas in which the project may assist Senegal without duplicating previous work.

One possible synergy would be to run a course in MSC eco-labeling for interested stakeholders: the goal would be to provide participants with a glimpse of the pre-evaluation and evaluation process, the principles and the performance indicators, as well as other alternatives which could be used in place of the MSC label.

The principles of MSC include an evaluation of the status of stocks and of the intensity of fishing effort in specific fisheries, and a review of the impact of the fisheries on the ecosystem (including by-catch). MSC certification also requires FMPs to be based on the precautionary principle.

To implement this project component, this year's activities might include:

- A bibliographical summary of the problems related to small pelagic species;
- An estimation of the abundance index of sardinella by GLM;
- A calculation of environmental indices;
- A characterization of the spatial-temporal environmental variability;
- A modeling of the relationship between sardinella stock abundance and other factors (correlations, temporal series, GLM, GAM, etc.);
- A series of consultations on the scientific knowledge of different species, landings, fishing efforts, fishing potential, as well as the bibliographical summary of priority stocks;
- A series of studies to support the implementation of a strategy to evaluate the fishing effort and the captures from Senegalese fishermen working in the sub-region and landing in Senegal;
- A study proposal supporting the implementation of a strategy to evaluate the effects of the fishing effort/excessive captures on biodiversity and food security;
- Support for a program implementing a Monitoring, Control and Surveillance (MCS) system including radars and aerial photos to calculate the volume of illegal fishing in Senegalese waters;
- The start of socioeconomic studies to support the implementation of a development plan for the ethamalosa and coastal shrimp in the Sine Saloum in the GIRMAC program framework;
- The completion of GIS maps using a database that includes data on selected stocks, CLPAs, administrative units, etc;
- The organization of a training workshop to build awareness of the MSC eco-certification process for administrators in Senegal's fisheries.

This work will be planned in consultation with DPM using the local consultant's report to identify which activities will be most appropriate and when they should start. It may be necessary to delay this activity to FY2013 because the MSC requires strong FMPs based on robust assessments and COMFISH may not produce such assessments until FY2013.

4.2.3 Management of marine ecosystems and biodiversity conservation:

Presidential decree number 2004-1408 created five new MPAs on 4th of November 2004 (Saint Louis, Cayar, Joal-Fadiouth, Abéné and Bamboung). At the same time WWF-WAMER and OCEANIUM identified a strategy for creating five new Marine Protected Areas (MPAs).

This MPA network protects sites with a specific ecological, social or economic value and builds stakeholder awareness about conservation and sustainable management issues. However, there are several weaknesses in implementing this network which compromise its usefulness in managing fisheries sustainably:

- A lack of accompanying measures and incentives to support bordering populations that are negatively affected by MPAs (lack of sustainable financing mechanisms for MPAs and a lack of real socio-economic benefits for populations in MPAs);
- Absence of a judicial and institutional framework for the creation and management of MPAs;
- Insufficient funds allocated to MPAs;
- Insufficient involvement of stakeholders in the process of creating and governing MPAs (lack of alternation solutions, weaknesses in capacity, lack of collaboration);
- Insufficient surveillance of MPAs (lack of equipment, trained personnel, incentives for local populations, etc.);
- Insufficient research and/or insufficient distribution of research results (lack of coordination between research programs, lack of baseline studies, lack of a standardized system of ecological surveillance and monitoring for MPAs: methods, protocols, indicators; insufficient documentation of the biological or economic benefits of MPAs);
- Lack of communication, information and awareness;
- Lack of planning and organization (lack of standardized methods for planning, a reduction of initiatives to create MPAs in the project and program frameworks without coordination or inter-sector planning);
- Lack a typology for MPAs in Senegal's empowering national legislation (Fishing codes, environmental codes, decentralization codes, etc.).

The Government of Senegal, in collaboration with several partners (WWF WAMER, WWF Italy, the Italian Cooperation, APTE, Envi-Pêche, the GIRMAC/World Bank program, and the FIBA), developed a National Strategy for MPAs in order to encourage and support the implementation of a connected and functional network of Marine Protected Areas.

During FY2011 *USAID/COMFISH* supported the technical validation and official approval of this National Strategy by the Ministry of the Maritime Economy and the Ministry of the Environment. This Strategy identified three strategic areas of intervention:

Strategic Axis 1: Institutional support in the creation and management of MPAs

Strategic Axis 2: Contribution of MPAs to the sustainable management of marine resources, to the conservation of marine and coastal biodiversity and to the improvement of the living conditions of local communities

Strategic Axis 3: Support for scientific research on MPAs

In FY2012 *USAID/COMFISH* will support implementation of this strategy, which will be continued during the third year of the project. An evaluation of the implementation of the national strategy will be conducted during FY2012 and the final project year to measure the effects of this strategy on the conservation of biodiversity, the improvement of fisheries governance, and the maintaining or improvement of the socio-economic benefits to the communities living around the MPAs targeted by the project. To do this, biological, socio-economic and governance indicators will be established during the second year to monitor and evaluate the impacts of the MPAs.

USAID/COMFISH will also support the placing of buoys marking these MPAs (excepting St. Louis which is outside *USAID/COMFISH* area – see Fig 2).

Furthermore, an evaluation of the needs as well as the creation of a program to develop professional competence in MPA management will be carried out with the Ministry of Fisheries (Department of

Community Areas) and the Ministry of the Environment, based on the model of Certification of Personnel in Marine Protected Areas (WIOCOMPAS) developed by the Center for Coastal Resources at the University of Rhode Island and the Association of Marine Sciences of the Western Indian Ocean, will be conducted. Based on the evaluation of this approach for the training of personnel, the project will define the following steps.

4.2.4 Identification of a sustainable management strategy for fish stocks which are vulnerable to climate change:

Various techniques are available for doing this including those illustrated above (Figs 1). These techniques will be applied to priority stocks in Senegal and results will be used, where appropriate, to identify a strategy for each vulnerable stock which will allow DPM to manage fisheries so that effects of excess effort and climate change on stocks can be addressed simultaneously. Stocks managed in this way will not be depleted by unexpected effects from climate change, which has impacted many fisheries. Coastal artisanal fisheries, which are based mainly on small pelagic species, are particularly vulnerable to fluctuating short and middle term fluctuations in landings caused by climate change.

4.2.5 Results of the year for strategies and policies to eliminate the use of destructive and unsustainable techniques for marine resources and for biodiversity conservation:

4.2.5.1: Strengthening of fisheries management and the establishment of synergies

- Biological and ecological data on sardinella will be produced;
- Sardinella population dynamics in northwestern Africa will be better understood;
- Spatio-temporal variability in the coastal environment in West Africa will be better understood;
- Key environmental factors influencing the dynamics of sardinella stocks exploited in West Africa will be identified;
- Protocols will be signed to create synergies and to determine areas of collaboration with programs and partners in the field;
- Scientific knowledge of priority stocks/species will be strengthened to support the development of local conventions and the implementation of management plans for marine resources and for fishing capacities;
- Socioeconomic studies will support establishment of plans to develop the coastal shrimp fishery initiated by the Department of Fisheries;
- CLPAs will be strengthened and UGDs will be supported with maps of fishing sites and zones so as to foster full implementation of control measures identified in FMPs
- CLPAs in Joal, Mbour and Sindia will be supported in the negotiation and development of three local conventions for a sustainable management of marine resources;
- Draft sardinella management plans will is finalized in three CLPAs;

4.2.5.2: Management of marine ecosystems

- A workshop on the MSC for fisheries administrators in Senegal will be organized
- A strategy and a plan to train MPA administrators and managers will be developed;
- The borders of the Cayar MPA will be identified;
- The development of ecotourism as an alternative activity to support the management of the MPAs in Joal-Fadiouth will be encouraged;

- Biological, socio-economic and governance indicators will be identified so as to monitor and evaluate the effectiveness of MPAs as a tool for the management of marine resources.

4.2.5.3: Sustainable management of fisheries impacted by climate change:

- Stocks which are vulnerable to climate change will be identified;
- Strategies for adapting the management of fisheries which are vulnerable to climate change impacts will be identified so as to strengthen DPM's sustainable management policy.
- Senegalese scientists will be trained in the use of environmentally sensitive assessment methods. They will be taught to apply results to protect stocks from combined effects of excessive effort and climate change.

Timetable:

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
Developing and apply strategies for collaboration and synergies between programs and partners							
Prepare and sign protocols with partners and other programs involved in the project target zone (priority stocks)	X	X			DPM, CEP, COMO PECHE, COGEPAS, CRODT, IUPA	Vaque/ Niane/ Frédéric	None
Develop and validate an action plan for programs and partners involved in the project target zones (on priority stocks recommended by the workshop)		X			DPM, COMO PECHE, COGEPAS, CRODT, etc.	Vaque/ Niane/ Frédéric	None
Implementing a strategy and conducting studies to support the development and participatory management of fisheries (improve the scientific database)							
Distribute workshop output on the choice of stocks to be included in management practices and UGDs to five other CLPAs	X				WWF, DPM, CLPA, COPEM/FENAGIE	Vaque/ Niane	None
Conduct studies on captures, fishing efforts and overfishing in Senegal	X				WWF, DPM, CRODT	Chris/ Vaque	URI/FC
Conduct studies relative to the evaluation and the recreation of a database on captures and fishing efforts in Senegal		X			WWF, DPM, CRODT, UBC	Chris/ Vaque	URI/FC
Support the implementation of a strategy to develop the fishing capacity (FAO methodology 1999) according to LPS needs	X	X	X		DPM, CRODT, CEP	Chris/ Vaque	URI/FC
Support the implementation of a strategy to evaluate the fishing capacity/effort as well as the captures by Senegalese fishermen operating in waters outside of Senegal but landing in Senegal		X	X	X	DPM, CRODT CEP, WWF	Chris/ Vaque	URI/FC
Support the implementation of a strategy to evaluate the effects of the fishing effort/excessive capacity on biodiversity and food security			X	X	DPM CRODT CEP WWF	Chris/ Vaque	URI/FC
Support the implementation of a program using	X	X	X	X	DPM, DSPS	Chris/	Tobey

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
data from radars and aerial photos from the MCS system to calculate the volume of illegal fishing in Senegalese waters					Coast Guard/Senegalese Army	Vaque/ Frédéric	
Start socio-economic studies that support the development and application of a plan to develop the ethmalosa and coastal shrimp fisheries in the Sine Saloum	X				DPM, URI	Chris/ Vaque/ Niane	
Create GIS maps using a database including information on selected stocks, CLPAs supported by the project, governing or administrative institutions, etc.	X				DPM, CLPA, CSE, CRODT, Partners	Vaque/ Niane/ Frédéric	
Conduct a bibliographic summary on the *USAID/COMFISH* priority stocks and define management objectives based on existing data	X				DPM, CLPA, Consultants, WWF, CRODT	Vaque/ Niane/ Frédéric	Najih
Using local conventions for sustainable resource management							
Conduct bio socio economic studies on the sardinella fisheries in Senegal and in the sub-region		X	X		DPM, CRODT CEP, IUPA, Local consultants	Chris/ Vaque/ Niane	Najih
Build awareness in administrative authorities and local authorities	X				CLPA, Locale communities, Technical fisheries services, administrative authorities	Vaque/ Niane	None
Sign collaboration protocols between the *USAID/COMFISH* project and key stakeholders	X	X			CLPA, Local communities, DPM	Vaque/ Niane/ Khady/ Frédéric	Tobey
Set up a pilot committee under the direction of the CLPA		X			CLPA, Locals communities, Technical services	Vaque/ Niane/ Frédéric	None
Selection of local coordinators for the application of local conventions		X			CLPA, local communities, technical services	Vaque/ Niane	None
Development of an action plan for the development and application of local conventions		X			CLPA, Partners, technical	Vaque/ Niane/ Frédéric	None

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
					services, CSE		
Conduct studies on the state of the management of marine resources and development of documents		X	X		CLPA, CSE CL, Technical Services, ENDA GP	Vaque/ Niane	None
Development of fisheries maps (stocks and fishing sites) and of maps of the littoral zone		X	X		CLPA, CL, Technical services, CSE	Vaque/ Niane/ Frédéric	Najih
Field verification of cartographical units		X	X		CLPA, CL, Technical services, CSE	Vaque/ Niane/ Frédéric	None
Development of regulations at the level of villages and fishing zones			X		CLPA, CL, Technical services, ENDA GP	Vaque/ Niane	None
Synchronization and validation of the regulations included in the local convention			X		CL, CLPA, Stakeholders, ENDA, DPM, GAIPES (if necessary)	Vaque/ Niane/ Khady	None
Review and approval of the local convention			X	X	CLPA	Vaque/ Niane/ Khady/ Frédéric	None
Approval of the Local Convention by the Ministry responsible for Fisheries				X	MEM/DPM	Vaque/ Niane/ Khady/ Frédéric	None
Implementation of a surveillance system				X	CLPA Technical services	Vaque/ Niane	None
Development of management plans				X	CLPA, Technical services, ENDA, WWF, CSE, Partners	Chris/ Vaque/ Niane/ Frédéric	None
Distribution and popularization of the Local Convention				X	CL, CLPA, GP, populations, Piloting committee, Technical services, Organizers	Vaque/ Niane/ Frédéric/ Khady	None
Development and implementation of an annual				X	CLPA, CL, GP,	Chris/	None

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
work plan related to the Local Convention (application of management plans)					Technical services	Vaque/ Niane/ Khady	
Workshop to identify a strategy to support the Plan for the Sustainable Development of the sardinella in Senegal and West Africa				X	CLPA, Technical services, ENDA, WWF, CSE, Partners	Chris	Najih
Resource monitoring							
Implement a system of data collection on the sardinella, shrimp and the Thiof		X	X	X	URI, CEP, CRODT, IUPA, DPM IRD/IFAN	Vaque/ Niane/ Chris	Najih
Identify stocks which are vulnerable to climate change and formulate management advices which will allow adaptive management measures		X	X	X	COMFISH,	Chris	
Organize a workshop to prepare Senegalese fisheries for the Marine Stewardship Council (MSC) certification to promote sustainability in marine fisheries management		X	X	X	CEP, WWF CRODT, IUPA, DPM	Vaque/ Niane/ Chris	URI/FC
Identify stocks which are sensitive to climate change and provide management advice on how to adapt such fisheries so as to protect them from effects of climate change			X	X	DPM/ COMFISH/WW	Chris	
Management of marine ecosystems							
Participate in the « WIOMSA MPA Professional Development Assessment »		X			WWF, DPM, DAC, DEEC, etc	Chris	Tobey
Develop a strategy for the training of MPA administrators and managers	X				WWF and partners	Chris	None
Conduct a diagnostic study on the constraints and gaps in the current management system in MPAs in the *USAID/COMFISH* project sites		X	X		WWF and partners	Chris	Tobey
Conduct a study to monitor the borders at Joal-Fadiouth	X				WWF and partners	Chris	Castro
Conduct a study on the technical and financial feasibility of defining and marking the borders of three MPAs (Cayar, Bamboung, Abené)		X			WWF and partners	Chris	Tobey
Mark the boundary of the Cayar, Bamboung, Abené MPAs based on a participative zoning process while taking into account navigability and security norms			X	X	WWF/ Fares and Balises and partners	Chris	URI/FC
Organize and support a National Scientific Council for MPAs in Senegal			X	X	WWF and partners	Chris/ Niane/	None

Activities	Exercise 2012				Partners	COMFISH	External Team
	Q1	Q2	Q3	Q4			
						Frédéric	
Organize a working group to promote the integration of processes to establish and manage MPAs and **climate change adaptation** in fisheries policies			X		WWF and partners	Chris/ Frédéric	Tobey
Support the development of ecotourism as an alternative activity to support the management of the Joal-Fadiouth MPAs			X	X	WWF and partners	Khady/ Frédéric	Tobey
Monitor and evaluate the impacts of MPAs on base indicators (biological, socio-economic and governance)	X	X	X	X	WWF and partners	Chris/ Vaque	Najih

4.3 Evaluation of vulnerability and capacity building in coastal communities for adaptation to climate change impacts

Climate change is a reality which will intensify in the coming years. It could have great impacts on the fishing sector, marine and coastal biodiversity and habitats, as well as coastal infrastructures and communities. These impacts, whether direct or indirect, could influence DPM's objectives for development and sustainable management of fisheries.

Factors which impact coastal communities may include: coastal erosion, habitat loss, rising sea levels, increases in the frequency of marine storms, intrusion of salt in coastal groundwater sources, and dwindling resources and reduced revenues among others.

During Y2011 *USAID/COMFISH* and ENDA ENERGY produced a manual for assessing the vulnerability of coastal communities to climate change. This manual guide will be applied in Y2012 by a group of interested stakeholders. It will be used to (i) evaluate the vulnerability of coastal communities to various climatically driven impacts (ii) plan adaptation strategies which these communities can implement to protect themselves from effects of climate change. Y2012 activities will also include:

- Capacity building for teachers/trainers, partners (ENDA, etc.) and other stakeholders on climate change;
- A Climate Change Training Workshop will be held in January 2012 with support from consultants (URI/CRC) on vulnerability identification processes and strategies to adapt to the impacts of climate change;
- COMFISH will identify six possible vulnerable sites in different CLPAs for vulnerability
- COMFISH will identify three of these sites as identifying and implementing adaptations to mitigate climate change impacts.
- A meeting with representatives from the DPM, CLPs, CLPAs, the National committee on climate change (CoMNAC) and other institutions will be held to (i) examine issues related to climate change and the lessons learned in fishing communities (ii) to discuss the need for integrating climate change concerns in policies in the fishing sector.

FY2012 results

- Vulnerability assessments in six coastal communities will be conducted.
- Strategies to adapt to climate change will be developed for three communities.
- An action plan will be established by each of the chosen communities with support from the project.
- Discussions will be held with the MEM and the Ministry of Environment on the need to integrate issues related to climate change in policies in the fishing sector.
- The capacities of instructors and stakeholders to manage and address/ adapt to climate change issues at both a national and CLPA level will be strengthened.

Timetable:

Activities	Exercise 2012				Partners	COMFISH	External Team
	T1	T2	T3	T4			
Climate change							
Create maps including the changes of different variables due to climate change (changes in temperatures, precipitation, sea level, and different scenarios)	X	X	X	X	CSE, ENDA Energy, DEEC, ACCC, BANAFA	Vaque/ Niane/ P M	Najih
Create synergies between current climate change initiatives		X			ENDA ENERGIE DEEC/ACCC/ UE/BM Ba Naafa	Vaque Niane	None
Validate the guide proposed by ENDA for assessing vulnerability	X				ENDA ENERGIE DEEC, ACCC, DPM, WWF, CLPA, CoMNAC	Vaque/ Niane	Tobey
Organize local workshops on vulnerability assessments and planning adaptation strategies for coastal populations at the level of the six CLPAs targeting by the project		X			ENDA, DPM, CLPA	Vaque/ Niane	Tobey/ Stevens
Organize a national workshop on the results of the evaluations and on the planning of climate change adaptation in partnership with the DPM and the DEEC			X	X	ENDA ENERGIE DEEC, ACCC, DPM, WWF, CLPA, CoMNAC	Niane/ Vaque	Rubinoff
Initiate discussions with the DPM on the need to integrate climate change concerns in policies in the fishing sector			X	X	ENDA ENERGIE, DEEC	Vaque/ Niane	None
Organize a training session on the process used to identify vulnerabilities and to adapt to the impacts of climate change	X				ENDA Energie, DEEC, stakeholders and partners	Chris/ Khady	CRC/ URI

4.4 Sustainable management of fisheries as a way to increase social and economic benefits for fishing communities

Three aspects will be included in this project component: 1. an analysis of value chains, 2. an improvement of techniques used to treat and conserve marine products in project sites, and 3. an evaluation of the perceptions of coastal communities on the state of their social well-being.

4.1.1 Economic value chain analysis:

The goal of this study is to carry out a deep analysis of the value chain for the principal products from artisanal fisheries on the Petite Côte, Saloum and the Cayar zone, specifically. For FY2012 *USAID/COMFISH* will target stocks of sardinella and coastal shrimp.

The value chain analysis allows identification of entry points and possibilities for improving profits and equity at all levels of processing (from the landing site to processing sites to selling points). COMFISH will focus specifically on the increase in added value from small-scale fisheries and for women working in traditional roles in the processing of marine products.

The study will include all problems associated with fisheries for the aforementioned stocks, in the processing, commercialization and seasonality of these products. The gender aspect as well as the characteristics of these fisheries products in the economic sector will also be taken into account.

4.1.2 "Ecosystematic" value chain analysis:

In addition to the economic value chain, *USAID/COMFISH* will study environmental aspects of values chains. This information will be used to develop a plan to decrease greenhouse gas emissions (particularly CO_2) produced throughout the treating, processing and conserving of marine products. This initiative will contribute to the implementation of measures to adapt fisheries to reduce their environmental foot print thereby mitigating the effects of climate change on e.g. CO_2 production in other sectors. Terms of reference for the analysis of the value chain will include the following elements:

- Traditional economic value chain analysis (see 4.1 above);
- A consideration of gender and changes in women's roles at successive links in the value chain aspects;
- A review of pollution caused along the refrigeration chain, and how this relates to practices related to quality, conservation techniques (gutting, bleeding, refrigeration, smoking, fermentation, etc.), water use, the hygiene and health conditions in the landing and processing sites;
- The identification of one to two fish landing sites (including Cayar) to test the feasibility of fisheries product labeling with clear criteria for traceability and thus value added;
- An analysis of the value chain will also take into consideration the economic aspects and tariffs, as well as the consumption of energy, the production of CO_2 and its contribution to industrial pollution in Senegal, and the detachment of information and power ("shadowing" and who controls who) throughout the market chain.

4.1.3 Improvement in treatment and conservation techniques for marine products:

Around 35% to 40% of landings are processed using artisanal methods (Mbour, Joal, and Cayar). Different artisanal techniques used include drying, smoking and especially braising and drying: the

final result of this process is known as *keccax*[6]. This is made using small pelagic species, specifically sardinella (one of COMFISH's priority species). Keccax is a key product of artisanal fish processing and provide nearly 67% of the total volume of processed fish. *Keccax* is a well-established traditional type of food in Senegal and is an important source of protein for lower income people all over Senegal.

For all of these reasons COMFISH will support the small pelagic *keccax* manufacturing sector. In so doing it will respond to an important concern of the Senegalese Government: increasing the value of marine products constitutes one of the strategic axes in the LPS. So, FY2012 COMFISH will support the processing sector Cayar and depending on the results, will extend its work to other sites.

Cayar will serve as a test site for the project. The artisanal processing of fish provides jobs to nearly 60% of the active female population in Cayar. Production in Cayar is dominated *keccax* processing o (90% of processed products). This generates important revenues for women who have few other opportunities to work.

Cayar's *keccax* benefits from multiple assets (MPAs, responsible fishing model, strong women's organizations) that can be exploited to label the product and increase its competitiveness in national and international markets. However, poor artisanal processing conditions and a poor working knowledge of commercialization circuits (similar to all processing sites) are major constraints that threaten the sustainability of activities in the zone.

Therefore *USAID/COMFISH* will support the project "**Support for women involved in the processing industry for an increase in the value of the braised-dried sardinella, or *keccax*",** developed by the association "Decontamination Fisheries Tourism Environment" (APTE, for the French "Assainissement Pêche Tourisme Environnement"), in partnership with the COPEM, the WWF, the Department of Animal Biology of the School of Veterinary Science at the University of Dakar, the Institute of Dietary Technology (ITA, for the French "Institut de Technologie Alimentaire"), the laboratory Hygiene and the Animal-Based Food Industry (HIDAOA, for the French "Hygiène et Industrie Des Aliments Alimentaires d'Origine Animale") of the Veterinary School to promote the assets of the *keccax* and to improve the commercialization conditions of the product.

This initiative aims to:

- Reduce poverty and the vulnerability of women in the fish processing industry in Cayar;
- Promote and increase the value of marine products;
- Increase the participation of women in the conservation of resources;
- Improve the means and living conditions of women in Cayar, using activities compatible with conservation and environmental protection.

At the same time, to measure the impact of the project on the social well-being of fishing communities in project intervention sites, a study will be conducted at the beginning of the project, at the halfway point and at the end of the project. This year, a state of reference analysis will be conducted on the feelings and perceptions of stakeholders on the state of their social well-being. This will help clarify the perceptions of the communities living in the project sites on the effectiveness of the project in the social domain, compared to other sites where this project is not operating and where other donor organizations have not intervened.

[6] Frequently but less correctly spelled as "kejax ".

FY2012 results:

- A study on value chains will be carried out and will provide:
    - understanding of constraints and opportunities for marine products (*keccax*);
    - better understanding of the costs of the targeted products;
    - pilot scale production of higher quality keccax which can be branded, labeled and sold at a higher price;
    - recommendations for increased competitiveness of target products in chosen markets;
    - better understanding of the impact of the exploitation of these products on the environment.
- The processing unit of Gie Manetoulaye Guène will be reorganized and equipped according to recognized hygienic standards;
- Constraints linked to proper processing techniques will be studied so as to improve the final product;
- Training sessions on hygiene and quality, on literacy and on leadership will be organized so as to implement better hygiene and product quality;
- Surveys on perceptions of stakeholders on social well-being will be conducted to evaluate results of these activities;
- An economic base line study will be carried out to measure the economic performance of fisheries on the basis of selected stocks using the tool "scorecard", developed by URI and the World Bank, is conducted.

Timetable:

Activities	Exercise 2012				Partners	COMFISH	External Team
	T1	T2	T3	T4			
Value chains							
Start of a study on the economic value chain for sardinella and coastal shrimp		X			DPM, CEP, DITP, Consultants	Vaque/ Niane/ Chris	Université de Suède/ Tobey
Start of a study on the ecosystem energy value chain and the bioeconomic value chain for sardinella and coastal shrimp	X				DPM, IDEE Casamance, SIK Consultants, CRODT, IUPA, DEEC	Vaque/ Niane/ Chris	Tobey
Processing and conservation techniques are improved							
Conduct microbiological studies on the processed products and other ingredients used in processing		X			APTE, UCAD, ITA/Veterinary School, HIDAOA, Women in processing, DPM	Khady/ Vaque	None
Standardize the processing methods and survey their application		X	X	X	APTE, UCAD, ITA, Veterinary School, HIDAOA, Women in processing, DPM	Khady/ Vaque	None
Establish the necessary conditions for the creation of a *keccax de* Cayar label				X	APTE, UCAD, ITA, veterinary school, HIDAOA, Women in processing DPM	Khady/ Vaque/ Frédéric	Castro
Establish a mechanism for the rational use of potable water			X		APTE, SDE, DPM, etc	Niane/ Frédéric	None
Support the development and application of consensual code of conduct			X	X	APTE, UCAD, ITA,	Niane/ Frédéric	None

Activities	Exercise 2012				Partners	COMFISH	External Team
	T1	T2	T3	T4			
					veterinary school, HIDAOA, Women in processing, DPM		
Identify the needs in terms of training on hygiene and quality (health standards strictly enforced)			X		APTE, UCAD, ITA, veterinary school, HIDAOA, Women in processing, DPM	Niane	None
Reenergize the health committees and implement a system for waste collection and recovery			X	X	APTE, DPM, Local communities and partners	Niane/ Frédéric	None
The processing site is equipped with the appropriate tools and facilities							
Conduct an audit on: 1) the capability of the equipment at the site to respond to sanitary emergencies; 2) the production capacities and the capacity to respond to changes in activities; 3) the level of respect for proper hygiene practices by the workers involved in processing; 4) the level of respect for environmental requirements; 5) the identification of priority investments to keep the processing procedure up-to-date; 6) the assessment of key loading stations	X	X			APTE, HIDAOA and partners	Niane/ Vaque	None
Reorganize the production unit of GIE "Mantoulaye Guène" to include a small management committee for the processing area	X	X	X	X	APTE, DPM, local communities and partners	Niane/ Frédéric	None
Equip women with fish trimming tools			X	X	APTE, DPM, local communities and partners	Niane/ Frédéric	None
Construct suitable storehouses			X	X	APTE, DPM, local communitie	Niane/ Frédéric	None

Activities	Exercise 2012				Partners	COMFISH	External Team
	T1	T2	T3	T4			
					s and partners		
The system used to acquire primary materials and ingredients is improved							
Support the implementation of a system to conserve primary materials in processing sites			X	X		Niane	None
Potential commercialization circuits are identified and exploited							
Organize training sessions on packaging techniques			X	X	FENAGIE, APTE and partners	Niane	None
Support the purchase of packaging materials			X	X	FENAGIE, APTE and partners	Niane/ Khady	None
The capacities of women are strengthened							
Organize training session to promote literacy			X	X	FENAGIE, COPEM, APTE and partners	Niane/ Khady	None
Organize leadership training sessions (strengthen decision-making power and the commitment to the conservation of resources)		X	X		FENAGIE, COPEM, APTE and partners	Niane/ Khady	None
Community perceptions of their own social well-being are evaluated							
Conduct a state of reference analysis on the perceptions of fishing communities on their own social wellbeing	X	X			Consultant, Apte, FENAGIE, COPEM and partners	Vaque	Crawford/ Najih

5. Project Management

5.1 Strategic Partners and clients

The University of Rhode Island (URI) is the implementing agency for COMFISH, and it works in close association with various partners who each have important expertise. Each of these contributes to and is strengthened by these partnerships which ensure (i) that fisheries sector in Senegal is strengthened (ii) that capabilities of national agencies and their local divisions acquire the capacities necessary to carry out new approaches developed during the life of the project. Beneficiaries and Partners are identified below.

5.1.1 MEM:

The Minister of the Maritime Economy, Fisheries, and Maritime Transport (MEM, for the French "Ministère de l'Économie Maritime, de la Pêche, et du Transport Maritime") is the main COMFISH beneficiary. The DPM (Direction des Peches Maritimes) is the designated fisheries management institution in Senegal, chiefly responsible for the management of marine resources in Senegal, and is COMFISH's main contact at MEM (see 6.1.2 below). COMFISH will also work if necessary with:

- Department of the Fishery Processing Industries (DITP, for the French "Direction des Industries de Transformation de Pêche "), which plays an important role in exportation and quality control, added value, and the packaging of marine products;
- Department of the Fisheries Protection and Monitoring (DPSP, for the French "Direction de la Protection et de la Surveillance des Pêches"), responsible for the monitoring, control and surveillance of the application of fisheries legislation and for the development of comanagement initiatives with local comanagement organizations (CLPAs);
- Unit of Studies and Planning (CEP, for the French "Cellule d'Etudes et de Planification") which, although its directly overseen by the Cabinet, occupies a cross-cutting position. CEP is responsible for: leading prospective preliminary studies of policies and strategies for sustainable development in the maritime sector; assuring the monitoring of the preparation and development of plans, projects and programs in the sector and of their consistency; following on the execution and verifying the assessments of the implementation of the projects and programs of the Department; organising and managing the flow of information in the sector; assuring the coordination of the planning of all activities in the Department; providing the economic monitoring of the maritime sector; playing the role of the spokesperson for the ministry services and the international organizations knowledgeable and competent in the field of marine studies and planning, among others.
- Department of Communal Areas (DAC, for the French "Direction des Aires Communautaires") (responsible for the development and implementation of policies in matters related to the development and management of an integrated and consistent national network of communal areas, marine protected areas and artificial reefs) will be involved in most activities related to the management of marine and coastal ecosystems.
- In accordance with the request of the DPM, the coordination of the project will be linked to the Management and Governance Office and the focal point will be the leader of this Division.

5.1.2 The Department of Maritime Fisheries (DPM):

DPM and fishing communities are the principal beneficiaries of the project. The DPM is the state entity responsible for the management of marine fisheries. It is essential to establish a solid partnership with this entity and clearly define roles and responsibilities in this relationship. In partnership with the National Program Coordination Unit (UCNP, for the French "Unité de Coordination Nationale du Projet"), in Y2011 DPM coordinated implementation of a number of project activities, including:

- The project launching;
- The evaluation of the current legal and institutional framework for comanagement, the necessary actions for the implementation of sustainable financing mechanisms for CLPAs, and a state of reference study on the capacities and the needs in the governance of CLPAs;
- The preparation of terms of reference for the description/profile of fisheries;
- The implementation of a pilot committee for the project;
- The monitoring and evaluation of the project performance.

5.1.3 The Ministry of the Environment and the Protection of Nature (ME):

is responsible for the management of protected areas, including certain coastal and marine parks (the Department of National Parks), as well as the coordination of initiatives and responses related to climate change through the Department of the Environment and Classified Facilities (DEEC, for the French "Direction de l'Environnement et des Etablissement Classés"). They played a crucial role during the Y2011 in finalization and formal adoption of the national strategy on MPAs. ME will be a key partner during the Y2012 for activities related to climate change and to biodiversity conservation. The WWF and ENDA ENERGY will work closely with the Minister in conducting these activities.

5.1.4 The Dakar Institute of Fisheries and Aquaculture (IUPA):

The Dakar Institute for Fisheries and Aquaculture (IUPA, for the French "Institut Universitaire de Peche et d'Aquaculture") is a regional training and research institution of the University Cheikh Anta Diop at Dakar (UCAD), which focuses on issues related to fisheries and aquaculture. Its mission is to provide high-profile training in diverse fields of science, technology, and the management of fisheries, aquaculture, and coastal aquatic ecosystems. IUPA will help COMFISH to (i) implement strategies for the development of human resources in applied research and technical studies (ii) develop and launch a research-action program which will link University research and fishermen in CLPAs through model widely used in the USA, Indonesia and South Korea[7]. This program will involve the research community, the Fisheries Administration, the University, civil society, stakeholders, etc.

5.1.5 The Ecological Monitoring Center (CSE):

The CSE's mission is to collect, process, analyze and disseminate data and information on natural resources using spatial referencing (GIS) technology, to improve the management of natural resources and the environment. The services offered by CSE include environmental monitoring, the management of natural resources and environmental studies, mapping, the development of information systems and provision of training sessions. The CSE has other fields of expertise, such as

[7] This include fisheries extension relating scientific projects to fishermen'

geographical information systems (GIS), climatology, remote detection, agriculture, socio-economy, and hydrology. The CSE will be involved in the development of a GIS database and maps for the project; it will be involved in a certain number of technical studies including the integration of local ecological knowledge in the characterization of the fisheries selected for the development of management plans, as well as certain aspects of the evaluation of vulnerability and the planning of strategies to adapt to the impacts of climate change and the identification of zones of biological importance. The CSE plays an important role in the spatial mapping of the country's primary stocks and interventions of different donor organizations in fisheries, in the jurisdictional location of existing CLPAs in project intervention zones.

5.1.6 Oceanographic Research Center – Dakar Thiaroye (CRODT):

CRODT is the designated stock assessment authority in Senegal. Its goal is to integrate biological, economic and social research in the management of living aquatic living resources at a national scale and to inform DPM so that the LPS can be implemented using best available assessments. This research is conducted in the framework of the thematic studies programs, including programs that focus on industrial fisheries, trawlers, sardine boats and tuna boats. The CRODT leads studies on the evaluation of fish stocks, artisanal fishing, the environment and the socio-economy of the Senegalese fishing system. COMFISH and CRODT will assess the current status of fish stocks, particularly sardinella and important demersal species which are vulnerable to climate change.

5.1.7 World Wildlife Fund (WWF):

The WWF/Marine Ecoregion in West Africa (WAMER) promotes sustainable management of natural resources in West Africa. Its conservation program is focused on stakeholders, assuring that all interventions respond to local needs. WWF uses the ecosystem approach to management of fisheries: this ensure that environmental needs of target species throughout their life cycle are studied, and not just the segment where harvesting occurs WWF also promotes the integration of fisheries management in a much broader social context, addressing questions associated with hygiene, decontamination, pollution, and public awareness. WWF-WAMER helped to establish and support work on sustainable fisheries in Senegal through direct application of field techniques and facilitated the legislative reform which that created CLPAs. The WWF is a partner in the implementation of the fishing initiatives of USAID's Wula Nafaa Program and is the principal implementation partner of the University of Rhode Island (URI) for USAID's West African Ba Nafaa project on sustainable fisheries based in The Gambia. The WWF in collaboration with the DPM, the DAC, the CRODT, ENDA and the civil society, will coordinate the implementation of activities related to Marine Protected Areas and will contribute to other important activities involving the strengthening of capacities of institutions and stakeholders. The WWF will also help develop a strategy to address gender issues.

5.1.8 Energy – Environment – Development in West Africa (ENDA Energy):

ENDA Energy works in Senegal and in all West African countries to strengthen capacities in the field of climate change and to help create alternative sources of energy. ENDA Energy participates in the Kyoto project "Think Global Act Local", and in the training of local stakeholders on investigative techniques for calculating volumes of carbon sequestration in selected forests. ENDA also helps in the development of small enterprises in rural areas that promote energy efficiency and renewable energy. During the second year, ENDA will coordinate activities related to the evaluation of the vulnerability of coastal populations and the planning of adaptation activities to climate change, in collaboration with the DEEC, the CRODT and other partners.

5.1.9 National Federation of Fishing Industry Economic Interest Groups (FENAGIE):

Since 1990, the National Federation of Fishing Industry Economic Interest Groups (FENANGIE, for the French "Fédération Nationale des Groupes d'Interet Economique de Pêche") has worked to help strengthen organizational and technical capacity in the processing of marine products by constructing infrastructures and production units for women, easing access to credit, and improving the living conditions of fishing professionals. FENAGIE is involved in establishing shops selling materials and accessories, in market research for marine products, sustainable management of marine resources and protection of marine environments. In Y2012 FENAGIE will be involved in activities to strengthen the capacities of professional organizations in leadership, literacy and in the study of the improvement of value chains in artisanal processing.

5.1.10 Association Peche Toursime Environnement (APTE):

APTE is a well organised women's group. It has experience in working with international NGOs in Cayar and Joal on fish processing and manufacture of improved quality fish products such as keccax, increasing hygienic processing, empowering women and targeting the full use of fish catches. The women's groups it works with are interested in regulating fish catches so that the sale of undersized immature sardinella is banned. COMFISH and APTE will work on improving the quality and increasing the value of processed sardinella so as to increase the value of the landings and fisherwomen's incomes. APTE will work with COPEM, the Biology Institute of Dakar University, the Institute of Food Technology which is recognized by the EU as providing an internationally acceptable food hygiene testing service, which will be used to ensure high standards of fish processing. APTE will also be an important COMFISH partner on gender studies and has local experts on its staff who have already assisted COMFISH Gender and CLPA consultants in the field.

5.1.11 Institut des Sciences de L'Environnement (ISE):

ISE is part of the University Cheikh Antar Diop and has considerable expertise in coastal biodiversity, marine habitats and small village communities. It has carried out previous projects on climate change and associated human migratory patterns, soil salinity, coastal erosion and related aspects of human and environmental ecology. In Y2012 ISE will support COMFISH in testing and applying the COMFISH/ENDA Climate Change Manual as a tool for identifying coastal fishing communities which are vulnerable to climate change, and how to assist them in adapting to climate change.

5.1.12 IFAN/IRD: Institut D'Afrique Noire/Institut de Recherches et Developpement:

IRD has a small and well equipped fish biology laboratory and a team with skills required to age fish for stock assessment purposes. COMFISH will subcontract ageing of key fish samples needed for stock assessment of many (mostly slower growing) fish species. Data produced by IRD will allow COMFISH to provide stronger assessment for some priority species (sardinella) and to provide reliable assessments for species such as Thiof (Grouper) which cannot be done in any other way. Assessments will be used to inform CLPAs and UGDs, and to support Fisheries Management Plans which will be created for priority stocks.

5.1.13 SIK: Swedish Institute for Food and Biotechnology – Sustainable Food Production:

The ecologically sensitive value chain analysis mentioned above will include an important component that will estimate CO_2 and other pollutants produced by Senegalese fisheries along the value chain from artisanal boats to international markets, as well as the volume and value of all fish and shrimp

caught and used. The results of the study will allow DPM to manage (i) the ecological foot print of Senegal's fisheries (ii) the conflicting objectives of optimising protein from fin fish and the value of shrimp landed (iii) the appropriate balance of artisanal and industrial fleets needed to optimise Senegalese fisheries. SIK will support COMFISH in a once off stand by itself study as it has unique knowledge and experience of Senegal.

5.1.14 UBC Fisheries Department:

The well-known ELEFAN programme package is the first and is still one of the most widely used and user friendly size based assessment programme packages, published by World Fisheries and later by FAO in two versions. In Y2012 this programme will be updated by COMFISH/UBC to include several new routines and capabilities and will be used in a workshop to assess sardinella and shrimp stocks. The new ELEFAN will be particularly useful as its data requirements are easy to satisfy. The contract will be a stand by itself one off contract because only UBC can perform the updating.

The roles and responsibilities of the different groups mentioned above will be clarified and refined as project activities progress. Additional relevant local institutions can be identified and enlisted as implementing partners where needed. Meetings with partners will be used to fine-tune roles, responsibilities, and expectations, including team-strengthening meetings.

5.2 Structure of the office and organization of personnel

The project is implemented by local personnel under the supervision of a Program Director, based in Dakar at the National Project Coordination Unit (UCNP, for the French "Unité de Coordination Nationale du Programme"). It runs a decentralized financial management system for local transactions (purchases and contracting) with the exception of the rules and procedures governing sub-recipients based in the United States and international personnel. Program coordination powers are also decentralized. The UCNP Director is responsible for the implementation of annual approved work plans and for performance achievement and is the point of contact for USAID. It is also responsible for the development of annual work plans, drafting reports on project progress, and terms of reference for consultants and local partners, as well as for the supervision and management of local personnel. Since URI is responsible for the financial reporting and the achievement of project performance, URI will provide technical and administrative support when needed and will supervise the local team. Due to the fact that the implementation of field activities will start in the second year and due to the large number of activities to be carried out, a local office will be based in Joal and run by a junior fisheries expert with the goal of improving the monitoring and coordination of field activities. This local setting (Joal) was chosen for two strategic reasons:

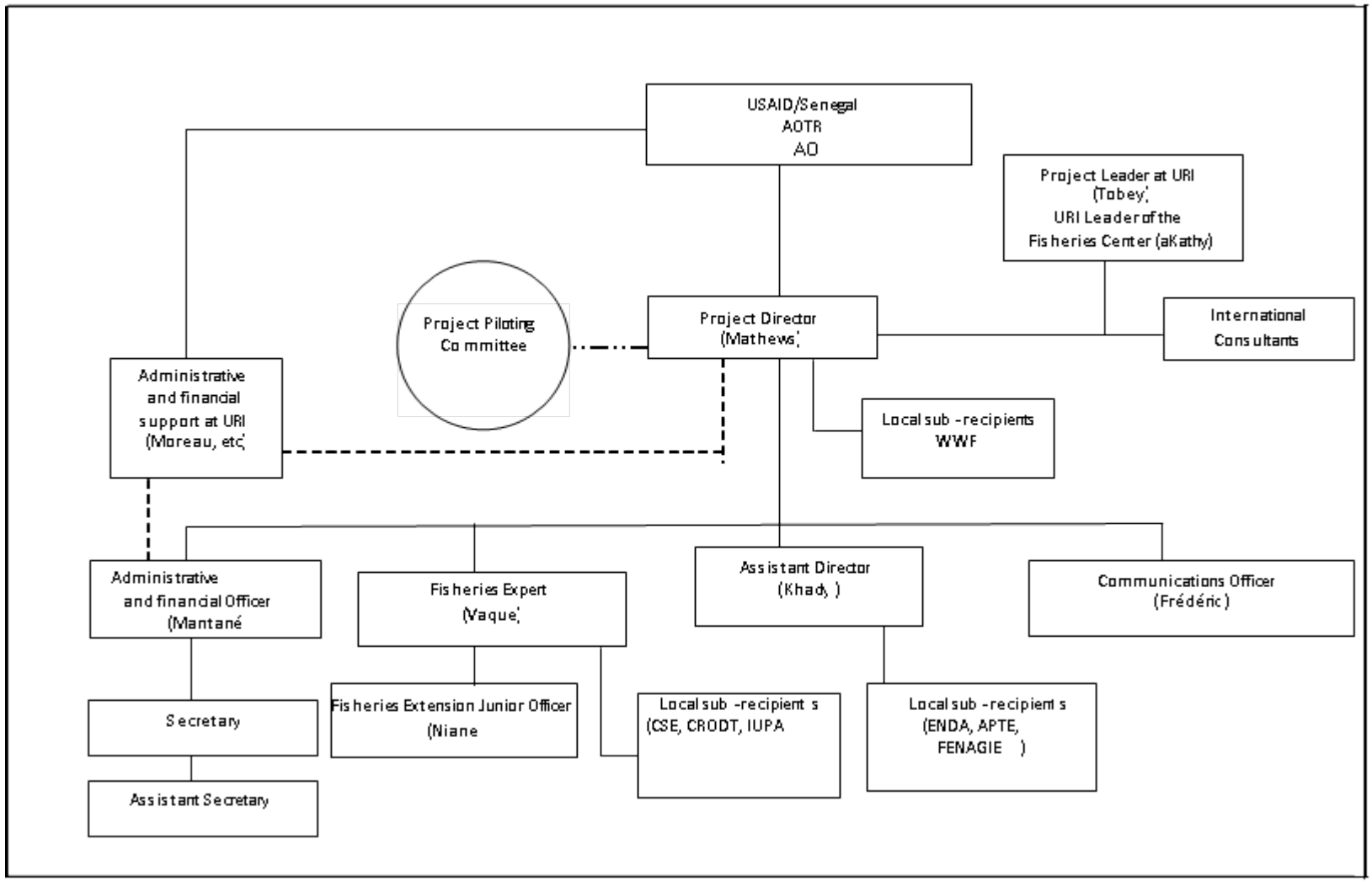
- Its central position in relation to project intervention sites (Cayar, Petite Cote, Foundiougne and Casamance).
- The fact that the Regional Fisheries Inspection office is located in Joal, which will facilitate collaboration with the technical fishery services.

Project implementation partners will be trained in the monitoring of performances, in the use of the *TraiNet* reporting tool, and in the USAID rules and procedures on the use of brands/logos and visual style guidelines as well as on compliance with environmental procedures. The UCNP, under the supervision of the Coastal Resources Center (CRC), will submit project reports to USAID/Senegal, while URI will submit the official financial reports. Under request from USAID, the project team will also provide information about quarterly accrued expenditures and cumulative expenses and the related budgetary analyses. Coordination between URI and the technical team will support: (1) the

supervision of national operations carried out under the coordination of the Project Director, and (2) technical assistance with diverse program components, among other things.

James Tobey with the CRC and Kathy Castro with the Fisheries Center are responsible for approval and oversight of URI and other foreign technical experts' travel and terms of reference. The terms of reference for these experts will be developed in close consultation with the Project Director. However, during their mission in the country, these foreign experts will be working under the supervision of the Project Director. Sub-contracts valued at more than 250,000 dollars will be financially managed from URI and smaller contracts may be managed by UCNP. Diagram 1 below provides an organizational chart of the project.

Diagram 1. Organizational chart of the UCNP



USAID/Senegal will be invited to planning sessions for work plans in order to contribute to the development of annual work plans and performance monitoring plans. The Project Director will submit work plans and annual results to the Agreement Officer's Technical Representative for review, comments and approval. USAID/Senegal will also be invited to certain major events and encouraged to make field visits. The Project Director will periodically inform USAID/Senegal on the progress of the project, as well as the challenges and accomplishments.

Regular assessments of the project and annual reporting activities will be conducted by the Center and the coordination team for the *USAID/COMFISH* project. The following services and reports will be delivered:

- Drafting and submission of three quarterly activity reports and a quarterly/annual report to the USAID/Senegal Agreement Officer's Technical Representative (AOTR). These reports will be in French and in English.
- The fourth quarterly report (July-September) will include information relative to the quarter but also a section that will summarize annual results and challenges encountered. The annual report will be longer and will provide more details on and analysis of the results achieved in the execution year. It will feature a table summarizing the level of accomplishment for each of the annual indicators derived from the PMP annual targets in the out-years.
- The collection of, analysis of and reporting on data to USAID on the indicators and targets submitted in the quarterly reports.
- Submission of an annual work plan in French and English by the Coastal Resources Center to USAID.
- Feeding of the USAID TraiNet system by the production of regular and timely data on all of the trainings offered by the project.
- Submission of monthly financial reports by the *USAID/COMFISH* project to the Coastal Resources Center.
- Submission of spending reports by CRC/URI to USAID.

Work plans and annual project reports will include: 1) a comparison between actual accomplishments and the goals and objectives stated for a given period; 2) the reasons justifying the achievement or not of expected results; 3) constraints facing project implementation and solutions to them.
A calendar outlining the execution of tasks and the delivery of reports listed above is provided in the table below.

Timeline of the implementation of project activities : Management and routine administration

Activities	2012				Responsible personnel
	T1	T2	T3	T4	
Routine reporting					
Telephone conference with key personnel (UCNP with the CRC and FC)					JT/NL
Quarterly and annual reporting to l'USAID	Jan.	April	Jul.	Oct.	CM/KS
Entry of data on training sessions in the USAID TraiNet system					KS
Sending of the annual work plan to USAID for approval				Sept.	JT
Financial Management					
Monthly financial reports from USAID/COMFISH to CRC					CM
Quarterly (cumulative) spending reports from CRC/URI to USAID					CM2
Quarterly Financial information from SF to AO and AOTR					CM2

CM - Chris Mathews, KS - Khady Sané,
JT-Jim Tobey (CRC), CM2-Cindy Moreau (CRC), NL-Najih Lazar

5.3 Communication

5.3.1 Development and implementation of a communication strategy for the project

As project start-up activities took longer than expected, the communication strategy was not implemented during Y2011, and was postponed until Y2012. This communication strategy, devised to last three years (2012-2014), will include two sections: **an internal communication strategy** and an **external communication strategy.** The internal communication strategy will deal will improvement of communications between team members, and between the project management team and key partners mentioned above. The external communication strategy will focus on the communications of the project with other important partners such as fishing associations or professionals, the Minister of the Maritime Economy, other projects or programs involved in fisheries, the media, the public, etc. In a general sense, the communication strategy will consist of the identification of communication objectives to support the priority themes and key project activities and to assure project visibility for the principal public audience. For each priority project theme, a communications objective, a corresponding principal audience, as well as messages, tools and appropriate communication approaches will be identified. The strategy will be updated yearly depending on the evolution and the lessons learned during the project implementation. In addition, an annual communication plan will accompany the execution of the strategy and the annual project work plan.

5.3.2 The official project launch

Due to schedule conflicts with key project partners, the official project launch could not be held in FY2011: it was held in October 2012. It was organized in consultation with USAID/Senegal, URI/CRC, the Minister of the Maritime Economy and other project partners. Nearly 200 people attended the launch ceremony. Considerable media attention was given to the event.

5.4 Success Stories

During FY2012 two success stories will be published, as required in the USAID Branding strategy.

5.5 Production of Communication AIDS

5.5.1 Information files and project kakemonos

An information file in French, composed primarily of an envelope folder and a booklet/flyer, was prepared and distributed in FY2012 to different target audiences (the press, visitors, partners, participants in project events such as the official project launching, workshops, etc). The English version will be completed and made available depending on the budget and the communication needs of USAID and URI/CRC.

A Kakemono, a type of mobile promotional sign, was also prepared in Y2012 for a brief presentation of the project and will be used at workshops and other appropriate events. The number and the type of support could be increased and its information (for example presentations of fields of intervention or key project themes) could change throughout the years.

5.5.2 Videos

In accordance with new USAID requirements, the USAID/COMFISH project plans to complete two videos on the intermediate project results FY2012. These videos will be published not only on the USAID and URI/CRC websites but also on social networks such as Facebook. The project will call on experienced providers from a list made up by USAID.

5.5.3 Field trips with the press

During FY2012 last quarter, a press field trip to one of the main project sites will be carried out. This media excursion will aim at improving COMFISH's visibility and will demonstrate the added value of the project and of collaborative management of marine resources in Senegal through on online press, television and radio will be transported to field sites to report to the general public on the project interventions and partners.

5.5.4 Strengthening of communication capacities

COMFISH's communication capacities, the mastery of Powerpoint presentations in particular, addressing the media, leading press conferences, etc. will be strengthened during the second and third quarters of Y2012. Partners such as the DPM, COMPEM/FENAGIE, etc may also benefit from these training sessions.

5.5.5 Building awareness of local convention and management plans

Once finalized, the local conventions and management plans will be distributed and promoted by the project and primary stakeholders, using community and local radios and other appropriate communication systems, depending on the location.

Activities	Year 2012				Local partners	COMFISH	External team
	T1	T2	T3	T4			
Development of a communication strategy	X			X	USAID, COPEM, FENAGIE, WWF, DPM,	Communication leader	Tobey
Project launching	X				USAID, MEM, URI/CRC, other partners	Communication leader	Tobey
Success stories		X	X	X	USAID, URI/CRC	Communication leader	Tobey
Production of communication systems	X	X	X	X	USAID, URI, DPM and other partners	Communication leader	Tobey

5.6 Coordination with Other Donor Organizations and Projects

There are several current projects and programs in Senegal with which COMFISH will collaborate throughout its life. *USAID/COMFISH* discussed with DPM and proposed establishment of a Steering Committee and will support the functioning of a scientific committee based at the level of the Study and Planning Unit of the MEM.

The Steering Committee (SC) is composed of representatives from the key partners of the *USAID/COMFISH* project, including the local partners of the Government in the implementation of MEM (for example MEM), NGOs, civil society organizations and key donor organizations involved in the fisheries sector. The SC will participate in the annual review of project progress, will provide comments and advice for the annual work plan and will meet at least once a year. The SC will help define the strategic direction of the project and help assure coordination and synergy between the activities of different organizations involved in the project. The SC will include people and/or organizations that could increase support for the project. Members of this group will include representatives from projects at the highest levels of governance. They will also include important stakeholders in communication and will provide advice related to the project strategy to support the reform of fisheries policies. Should the case arise, the project could be asked to participate in or provide information on its evolution to the Coordination Group of Donor Organization involved in fisheries called “Thematic Fisheries Group”, which meets monthly.

The SC is responsible for:

- Coordinating the COMFISH partnership and the synergies with other projects
- Validating different reports completed in the project framework
- Participating in the annual project evaluation
- Examining and validating annual work plans
- Assisting in the definition of the strategic direction of the project and assuring the coordination and synergy between the activities of different organizations involved in the project
- Contributing to the development of the program by communication with political authorities and with national and international partners, notably financial
- Mediating discussions on the partners and sources of conflict in the framework of the program implementation

The SC is expected, when approved by MEM, to be composed of:

1. The Secretary General of the Ministry of the Maritime Economy or his/her representative
2. The Director of Maritime Fisheries or his/her representative
3. The representative of the Minister of the Economy and Finances
4. The USAID/COMFISH supervisor at USAID or his/her representative
5. The Coordinator of the USAID/COMFISH project or his/her assistant
6. The Coordinator of ENDA/ENERGY or his/her representative
7. The Leader of CRODT or his/her representative
8. The President of CONIPAS
9. The Director of IUPA or his/her representative
10. The Director of the Ecological Monitoring Center or his/her representative
11. The Coordinator of the CEP or his/her representative
12. The Director of the DITP or his/her representative
13. The Director of the DPSP or his/her representative
14. The Director of the DPC or his/her representative
15. The Director of aquacultural resources or his/her representative
16. The Director of Communal Areas or his/her representative
17. The Coordinator of WWF/WAMER or his/her representative
18. The President of the FENAGIE or his/her representative
19. The President of COPEM or his/her representative
20. The representative of ATPE

The president of the SC is *ex oficio* the Secretary General of the Ministry of the Maritime Economy or his/her representative.

The SC may take up other responsibilities as it decides.

The decisions of the Committee will be adopted by consensus of its members. However, in the case of insurmountable differences, the SC could allow an examination of contentious issues by a small group composed of SC members or by the Scientific and Technical Council (CST, for the French "Conseil Scientifique et Technique") for technical advice.

The Scientific and Technical Council is the technical consultative authority that brings together a representative group of principal projects involved in the same field of governance and management of marine resources in Senegal. The *USAID/COMFISH* project plans to support this coordination framework based at the level of the CEP. The principal functions of the Council include:

- Promote an exchange between different partners
- Facilitate research of the complementary areas, the compatibility, and the coherence in approaches as well as the development of synergies
- Issue recommendations and define general priority directions
- Take note of information and promote debate
- Study the suggestions coming from the Piloting Committee
- Provide the support and advice necessary for the preparation of annual work plans

The CST is composed of a representative of each of the following organizations:

1. Thematic Fisheries Group of donor organizations
2. USAID
3. World Bank
4. European Union
5. GIZ
6. Spanish Cooperation
7. Dutch Cooperation
8. COMO/Peche
9. COMFISH
10. CRODT
11. IUPA
12. CSE
13. ENDA/ENERGY
14. WWF-WAMER
15. COGEPAS
16. CEP
17. DPM
18. FENAGIE
19. DITP
20. DPSP
21. DAC
22. DPC
23. GAIPES

The CST has leeway to include other important technical partners if the need arises. The presidency of the CST will be assured by the CEP. The following measures will be applied to assure proper functioning of the CST:

- The CST will be regularly convened by the Director of Fisheries to discuss ongoing activities and issues with coordination, activity gaps, and synergies, among other matters. The President of the CST decides which people could potentially be invited depending on the circumstances.
- The CST will have the authority to examine files through email exchanges for urgent submissions. The order of the day could involve one or multiple themes.

The committee will meet at least once per year or such times as circumstances required.

Activities	Year 2012				Local Partners	COMFISH	External Team
	T1	T2	T3	T4			
Meeting of the Steering Committee	X			X	USAID	Team Leader	None
Participate in meetings with the Fisheries Coordination Group for donor organizations	X	X	X	X	USAID	Team Leader	None
Participate in CST meetings		X		X	MEM	Team Leader	None

5.7 Performance Management, Evaluation and Learning

Following USAID ADS 203 guidance, a Results Framework (RF) and Performance Management Plan (PMP) accompanies this work plan (Appendix 1). The main purpose of the PMP is to assess whether activities are leading to intended results. The PMP serves as the basis for continual assessment and adaptive management of the project design and implementation, for generalized learning, and for reporting results to USAID. To monitor project indicators, such as CLPA capacity and improvements in socio-economic well-being, baseline studies will be carried out at the start of FY12. The Deputy Di-

rector supervises the PMP database. A full-time PMP staff person will be hired by *USAID/COMFISH* in FY12 to work under the Deputy Director's supervision.

A tool to measure 'fisheries economic performance' which has been developed and used in other countries will be applied to selected fisheries in the *USAID/COMFISH* project. While not one of the PMP indicators, this will provide a comparison against other countries (including Gambia) and a baseline from which to determine trends at mid-project and end of project.

The PMP Life of Project definitions and targets are in the process of being revisited and revised and new climate change indicators added as recommended by USAID/Senegal. The revised Monitoring and Evaluation Framework and PMP Plan will be submitted to the *USAID/COMFISH* AOTR in a separate document for review and approval. It will be submitted shortly after this Work Plan is submitted.

Semi-annual partner meetings are held that serve to coordinate activities. The project will hold an annual work planning workshop as well. At these, partners discuss key accomplishments, challenges, lessons learned, and plan the out-year activities. These are good opportunities for all stakeholders to gather and assess progress towards producing results. The Deputy Director serves as the field based PMP supervisor. A new staff member will be hired in FY12 whose responsibility will be to manage the performance management system under the supervision of the Deputy and will keep records and evidence files, conduct quality control, and implement assurance procedures.

Activity	FY 2012				Local Partners	Lead In-country	External Team
	Q1	Q2	Q3	Q4			
Annual work planning meeting				X			
Semiannual partner meeting, learning retreat and annual work planning w/ implementing partners, USAID and selected other donor projects invited as appropriate		X		X	all	Deputy Director	Tobey
Quarterly PMP reporting to USAID	X	X	X	X	all	Deputy Director	Tobey

The project's results framework and indicators for each result area are provided in Appendix 1, which also summarizes Year 1 results, Year 2 and life-of-project targets. The specific results, targets and indicators to be monitored will be reviewed annually to determine if the targets and/or project strategy need adjustment based on experience drawn from implementation.

5.8 Environmental Monitoring and Compliance

An IEE was submitted in Year 1 and an environmental screening process is in place that falls under the supervision of the project Deputy Director. During Year 1 no activities with 'negative determination with conditions' were implemented.

During Year 2012, the majority of the activities have a "categorical exclusion" threshold determination (for example, training, meetings, evaluations, surveys). The following activities fall under a 'negative determination with conditions' threshold and will be closely monitored.

- Reduce post-harvest losses and improve product quality
- Enhance fisheries value chains
- Improve fishing community resilience to climate change

Environmental screening follows the *Africa Bureau Environmental Report Form Review Process*, which is described in the Bureau's Environmental Procedures Training Manual**,** "*Annex G: Umbrella IEEs and Subgrant Environmental Screening*," as well as in the Africa Bureau Environmental Guidelines, Part III. Both can be found at http://www.encapafrica.org/resources.htm. An Environmental

Mitigation and Monitoring Report (EMMR) will be completed at the end of Year 2 and submitted to USAID/Senegal alongside the annual report in October 2012.

5.9 Branding

The USAID/COMFISH Project provides information through many channels. This includes through presentations at meetings, conferences, outreach sessions and other forums as well as through print media—e.g., locally produced Information, Education and Communication (IEC) materials, pamphlets, brochures, policy briefs, guides, and PowerPoint presentations. The main target audiences include local communities, local government agencies, national policymakers, grassroots NGOs, and other donors. Acknowledgement is always given to the generous support of the American people through USAID in all Project communications and materials. Also recognized are partnerships and support from local government ministries, agencies and departments who participate in various activities of the Project. Items produced and type of marking expected is shown in the following table.

Synopsis of Planned Communication Items Affected by USAID Marking/Branding Regulations (ADS 320/AAPD 05-11) in Year 2

Item	Type of USAID marking	Marking Code	Locations affected/ Explanation for any 'U'
Press materials and success stories	USAID logo (co-branded as appropriate)	M	Primarily a Senegalese audience
Project brief/fact sheet	USAID logo (co-branded as appropriate)	M	Primarily a Senegalese audience
PowerPoint presentations at meetings, workshops and trainings	USAID logo (co-branded as appropriate)	M	Primarily a Senegalese audience
Brochures/posters/T-shirts/caps	USAID logo (cobranded where/as appropriate)	M	Primarily a Senegalese audience
Technical Reports	USAID logo (cobranded where/as appropriate)	M	Primarily a Senegalese audience
Project Office in Dakar	Project sign in French and project slogan in local language	U	Primarily a Senegalese audience
Project Office in Joal	Project sign in French and project slogan in local language		
Project vehicles, office furnishings, computer equipment. purchased for project administration	No USAID identity used	U	Standard exclusions under USAID marking guidelines/policies

Marking Codes: M = Marked, U=Unmarked

5.10 International Travel Schedule

The following table shows dates and purposes for all international travel (both to Senegal and departing Senegal) budgeted by the Project during FY12.

MONTH	Traveler and Purpose
October	Chris Mathews and Khady Sane Diouf; travel to URI
November	No scheduled travel

MONTH	Traveler and Purpose
December	No scheduled travel
January	Pam Rubinoff and Hilary Stevens (URI)/ climate change V&A training, awareness raising and assessment Chris Anderson (URI); fisheries economic performance baseline Najih Lazar (URI); IUPA, CRODT and Partenariat activities
February	Madeleine Hall-Arber (MIT); workshop on strategies for gender capacity building
March	Kathy Castro and Barbara Summers (URI); fishing best practices Najih Lazar (URI); IUPA partner work program
April	James Tobey; project management, climate change and value added studies
May	Najih Lazar and Joe DeAlteris (URI); stock assessment workshop, marine certification meeting, and work with IUPA and CRODT 2 Senegalese; Coastal Climate Change Institute at URI
June	4 Senegalese; Fisheries Leadership Institute at URI
July	Brian Crawford; fisheries management planning
August	James Tobey, Kathy Castro, Najih Lazar; annual partners meeting and FY13 workplanning 1 Senegalese; matriculating to URI graduate program in Marine Affairs or Fisheries
September	Cindy Moreau, James Tobey; Cathy Dwyer; FY13 budgeting

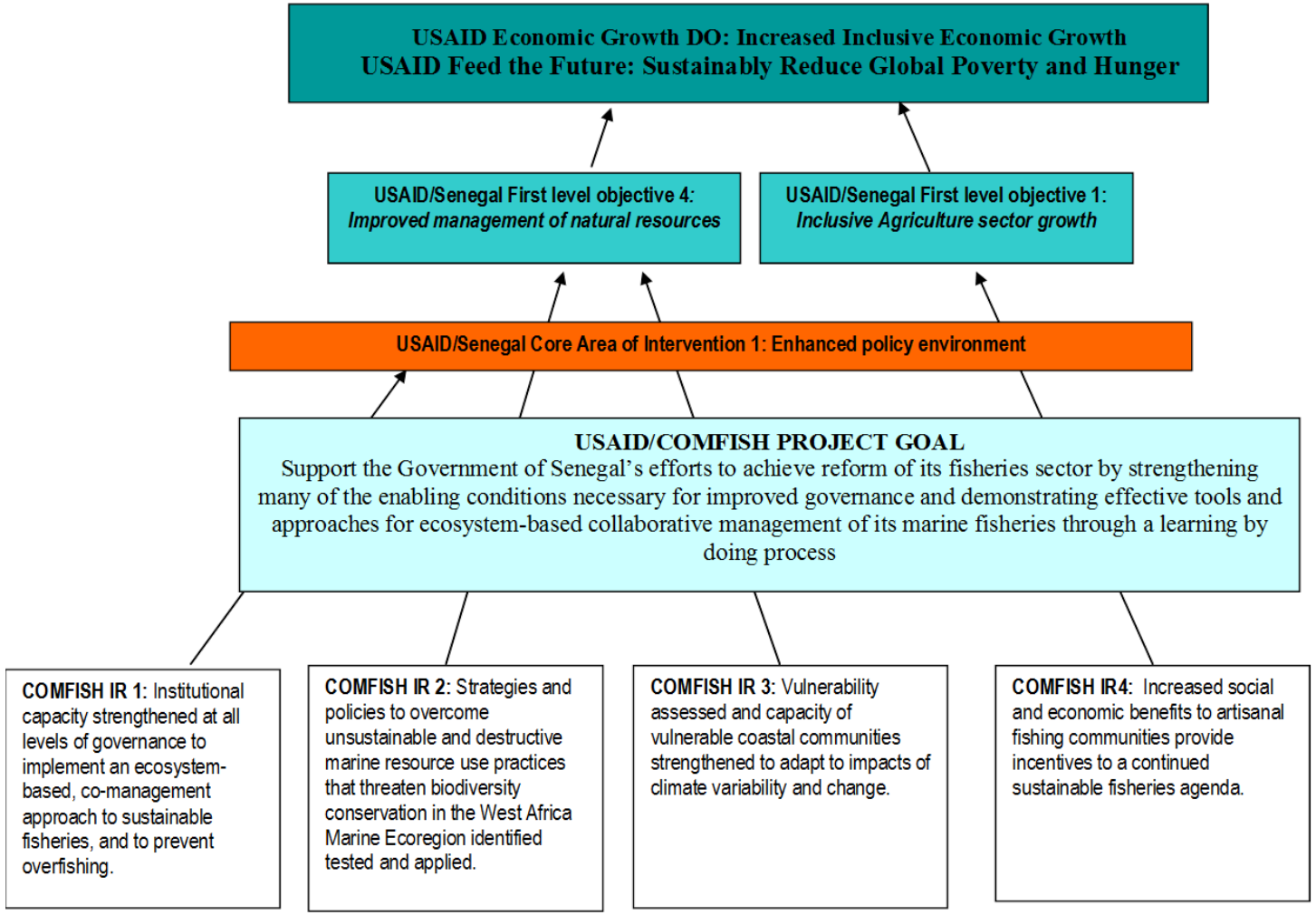
6. Budget

Year Two Budget by Program Element*	**Request**	**Cost Share**	**Total**
Institutional Capacity Building	$584,543	$162,104	$746,647
Policies and Strategies	$1,139,959	$ 268,550	$1,408,509
Climate Change	$256,639	$180,279	$436,918
Socio-Economic Benefits	$302,728	$36,266	$338,994
Communications	$115,014		$115,014
Project management	$801,117		$801,117
Total	**$3,200,000**	**$647,199**	**$3,847,199**
*Note: These program elements and requested budgets do not show the allocation of funding by source (climate change, biodiversity, and FtF funding sources). For example, funding from climate change earmark is allocated across all program elements and is not restricted to only climate change vulnerability assessment and adaption planning. Climate change activities also enter in Capacity Building; Policies and Strategies; and Socio-Economic Benefits result areas.			
Year Two Budget by Object Class Category			
URI Personnel and Student Support	$250,864	$110,431	$361,295
URI Fringe	$102,071	$35,937	$138,008
In country staff and consultants	$1,055,816	$126,508	$1,182,324
Subcontracts	$631,284	$ 236,267	$ 867,551
Other direct costs	$ 255,963	$100,000	$ 355,963
Travel	$347,108		$347,108
Capital Equipment	$27,556		$27,556
Total Direct Costs	$2,670,662	$609,143	$3,279,805
Indirect	$529,338	$38,056	$567,394
Total	**$ 3,200,000**	**$647,199**	**$3,847,199**

Appendix 1. Performance Management Plan and Targets

USAID COMFISH Results Framework

The Results Framework below shows the overall intersection of COMFISH Intermediate Results (IR) with the Feed the Future Framework/Senegal. Each IR has one or more indicators and LoP Targets that are shown in the table on the following pages. Targets will be reviewed and adjusted annually.



USAID COMFISH Performance Indicators and Life of Project Results

Indicator	LOP Target	YR1 Result	YR2 Result
Result 1: Institutional capacity strengthened at all levels of governance to implement an ecosystem-based, co-management approach to sustainable fisheries, and to prevent overfishing			
1. Management effectiveness of CLPA's at *USAID/COMFISH* project sites	Annual increase of 25% in terms of scorecard on management effectiveness	No result expected in YR1. Scorecard created.	Baseline estimated for each CLPA
2. Number of institutions/organizations undertaking capacity/competency strengthening as a result of USG assistance	10	0	4
3. Number of individuals who have received USG supported short-term agricultural environment enabling training (FTF indicator 4.5.2-7)	2,000	64	700
Result 2. Strategies, policies and best practices to overcome unsustainable and destructive marine resource use practices that threaten biodiversity conservation in the West Africa Marine Ecoregion identified, tested and applied			
4. Number of policies/regulations/ administrative procedures **analyzed** (FTF indicators 4.5.1-9) (Stage 1 of 5), each measuring a successive stage in the progression from analysis to implementation	7	2	3
5. Number of policies/regulations/ administrative procedures **drafted and presented for public/stakeholder consultation** (FTF indicators 4.5.1-10) (Stage 2 of 5), each measuring a successive stage in the progression from analysis to implementation	7	0	4
6. Number of policies/regulations/ administrative procedures **presented for legislation/decree** (FTF indicators 4.5.1-13) (Stage 3 of 5), each measuring a successive stage in the progression from analysis to implementation	6	1	1
7. Number of policies/regulations/ administrative	6	0	1

procedures **prepared with USG assistance passed/approved** (FTF indicators 4.5.1-12) (Stage 4 of 5), each measuring a successive stage in the progression from analysis to implementation			
8. Number of policies/regulations/ administrative procedures **passed for which implementation has begu**n (FTF indicators 4.5.1-11) (Stage 5 of 5), each measuring a successive stage in the progression from analysis to implementation	5	0	2
9. Number of farmers and others who have applied new technologies or management practices as a result of USG assistance (FTF indicator 4.5.2-5)	38,275 fishers (number of fishermen estimated in Dakar, Rufisque, Mbour, Fatick and Foundiougne. This represents 64% of all fishers in Senegal.)	0	0
10. Number of hectares in areas of biological significance and/or natural resource showing improved biophysical conditions as a result of USG assistance	Tracked, but no target	0	n/a
Result 3. Vulnerability assessed and capacity of vulnerable coastal communities strengthened to adapt to impacts of climate variability and change			
11. Number of people receiving training in global climate change as a result of USG assistance (USAID FACTS Climate Change indicator 4.8.2-6)	700	0	200
12. Number of climate vulnerability assessments conducted as a result of USG assistance (USAID FACTS Climate Change indicator 4.8.2-11)	8	0	5
13. Number of laws, policies, agreements, or regulations addressing climate change proposed, adopted, or implemented as a result of USG assistance (USAID FACTS Climate Change indicator 4.8.2-4)	9	0	6 proposed
14. Number of people with increased capacity to adapt to the impacts of climate variability and change as a result of USG assistance (USAID FACTS Climate Change indicator 4.8.2-7)	120,000	0	0

Result 4. Increased social and economic benefits to artisanal fishing communities provide incentives to a continued sustainable fisheries agenda			
15. Number of private enterprises, producers organizations, water user associations, women's groups, trade and business associations, and CBOs receiving USG assistance	12	0	3
16. Number of individuals who have received USG supported short-term agricultural sector productivity training (FTF indicator 4.5.2-7)	800	0	100
17. Number of rural households benefiting directly from USG interventions (FTE indicator 4.5.2-13)	20,000 fisheries households (the actual number to be determined by the stocks selected for management planning)	0	150
18. Fishery sector stakeholders in project sites perceive that their welfare is better off due to USG assistance (this is not an FTF indicator, but measures project impact)	Target to be defined	0	Baseline conducted