USAID/COMFISH Project

PENCOO GE

Collaborative Management for a Sustainable Fisheries Future in Senegal

PROCEEDINGS REPORT
WORKSHOP ON FISHERIES MANAGEMENT AND PRIORITY STOCK SELECTION
Dakar, July 20-22 2011

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1. INTRODUCTION

In an effort to confront the crisis in the fisheries sector and to promote the sustainable management of fisheries resources in Senegal, the USAID/ COMFISH project, in collaboration with the Department of Marine Fisheries, is proposing and promoting a collaborative management model for the sustainable management of fisheries. This model will allow the fishing sector to play a significant and sustainable socio-economic role in Senegal while simultaneously preserving the marine environment.

To validate this new model, a 3-day workshop (from July 20 to 22) was held at the Hotel des Almadies in Dakar, with the presence and participation of key stakeholders in the fishing industry, including representatives from organizations of professional fishermen, government agencies, national and international NGOs, and donor organizations, among others.

The objectives of this meeting were to identify:

a) key objectives in the management of fisheries to ensure the bio-economic sustainability of fisheries, as mentioned in the Letter of Sector Policy (LPS) of fisheries and aquaculture (LPS-PA) of the Ministry of Maritime Economy ;
b) weaknesses in the current system of fisheries management (in terms of capacity, information systems and assessment) and steps that need to be taken to improve the system and provide the necessary support and advice to the Government of Senegal on issues related to sustainable fisheries management;
c) all current projects and activities implemented or financed by donor organizations (bilateral or multilateral) in the coastal zone and fisheries of Senegal, in an effort to create synergies between projects and to avoid overlapping efforts;
d) potential contributions of the USAID/COMFISH project, using the expertise of the URI/CRC and other national and international organizations, to fill these gaps.

The agenda of this meeting listed around twenty major themes that can be divided into four groups, which are listed below:

(1) Bio-economics and the management of fleet capacities: the foundations of sustainable fishery policies in Senegal;

(2) Organisations involved in the management of fisheries in Senegal's coastal zone;

(3) Building institutional capacity related to the assessment of stocks and other research in Senegal;

(4) Choice of the stocks/UGDs that the USAID/COMFISH project will focus on for the duration of the project.

2. GENERAL RECOMMENDATIONS FROM THE WORKSHOP

Following discussions among participants, participants came to an agreement on the following recommendations:

<u>On CLPAs</u>

1) *Coordinate all initiatives and efforts related to CLPAs: in places where many CLPAs (and the corresponding CLPs) are utilizing the same stock, the CLPAs should coordinate the efforts of their members in such a way that the combined efforts on the stock correspond to the biological productivity of the stock;*
2) *Make CLPAs fully functional with the objective of developing and improving fisheries: the secretaries of the CLPA (fisheries officers) must fulfil their leadership role;*
3) *Build capacity and empower the CLPA in matters related to surveillance and the enforcement of regulations.*

<u>On the management of capacity</u>

1) *Develop and implement a plan to manage fleet capacity that takes into account stocks and the socio-economic environment according to international standards (FAO 1999);*
2) *Conduct a diagnostic analysis of current fishing capacities;*
3) *Raise awareness among authorities and professional organizations of the concept of capacity management;*
4) *Strengthen the capacities of institutions involved in capacity management (DPM, IUPA, CRODT, CEP, ANAM, DPSP, PORT).*

<u>On the choice of priority stocks</u>

1) Work on the priority stocks selected at the workshop: seven species were chosen and are listed below in order of priority. Choices were made based on economic, environmental, and biological criteria, which were weighted based on their importance. These selected species are:

- Sardinella (**Sardinella**) (first)
- The Bonga (**Ethmalosa**) (second)
- Coastal shrimp (**Penaeus notialis**) (third)
- Octopus (**Octopus**) (fourth)
- Thiof (**Epinephelus Aenus**) (fifth)
- Yeet (**cymbium**) (sixth)
- Green lobster (seventh)

2) Continue this work with other fisheries stakeholders to order to finalise the stock choices.

<u>On synergies</u>

1) Develop synergies between projects and programs to avoid overlap. The workshop identified areas where donors organizations work, and listed several recommendations on strategies to avoid overlap and repetition between projects. The USAID/COMFISH project could work on the same species as other projects but in different locations, or on different species in same location, or on species that have not yet been studied (it is necessary to define an action plan for this purpose);

2) Share the results of the diagnostic analyses and evaluations of the CLPAs (current study: FAO and PRAO) and of other professional organizations;

3) Take into account problems related to fisheries development through co-management;

4) Take into account the issue of research in CLPAs (coordinated by the DPM);

5) Facilitate the production and sharing of information and knowledge within CLPAs and between CLPAs;

6) Organize coordination meetings between the USAID/COMFISH project and its partners to build synergies.

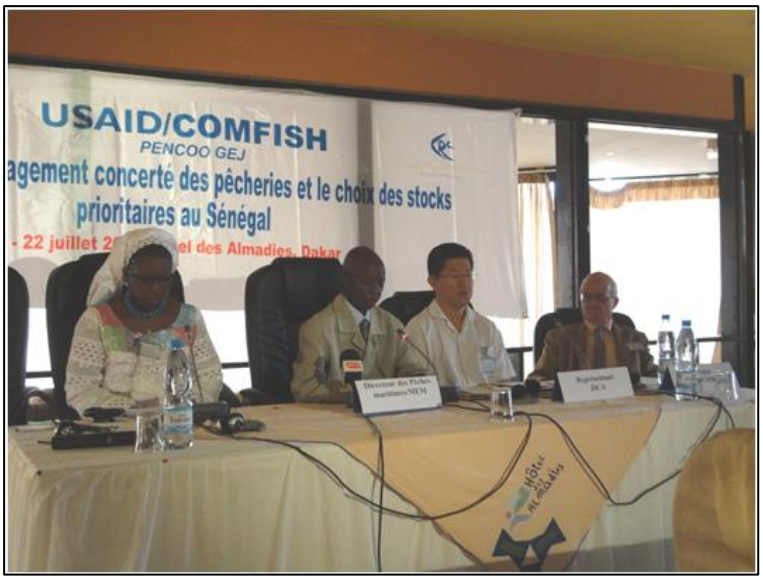
3. WORKSHOP PROCEEDINGS

OPENING CEREMONY

The opening ceremony was lead by Mr. Thiam, Director of Marine Fisheries, who, on behalf of the Ministery of the Maritime Economy, welcomed the participants and thanked the staff of USAID/COMFISH for organizing this workshop. The Director of Fisheries individually thanked the key figures present at the head table, including:

- The team leader of the USAID/COMFISH project (representing USAID);
- The team leader of the project COGEP, (representing JICA);
- The representative of the World Bank;
- The assistant team leader of the USAID/COMFISH project.

Mrs. Khady DIOUF SANE, Assistant Director of the USAID / COMFISH project, presented the workshop objectives and the expected outcomes of the workshop. Mr. Christopher Mathews (representing USAID) then took the floor along with Mr. Naohiko Watanuki (representing JICA). After thanking the Senegalese authorities, they reiterated their institutions' commitment to supporting the Ministry of Maritime Economy in the implementation of the Letter of Sector Policy.



The Director of Fisheries then thanked the participants for attending and thanked the organizers for their interest in the implementation of sector policy letter. He also acknowledged the diversity and importance of the topics proposed by the USAID / COMFISH, including:

- Bio-economics and the management of fleet capacities: the foundations of sustainable fishery policies in Senegal;
- The organisations involved in the management of fisheries in Senegal's coastal zone;
- Building institutional capacity related to the assessment stocks and research in Senegal;
- Stocks and priority areas for the USAID/COMFISH project.

With these words Mr. Thiam concluded the opening ceremony of the workshop on:

"FISHERIES MANAGEMENT AND THE SELECTION OF PRIORITY STOCKS"

DAY 1

SESSION 1 : Bio-economics and the Management of fleet capacities: the Foundations of Sustainable Fishery Policies in Senegal

The first session of the workshop was led by Mr ***Ousmane Ndiaye***, inspector at the Ministry of Maritime Economy. This session focused on bio-economics and the management of fleet capacity, which is the foundation of sustainable fisheries in Senegal.
The first two presentations of this session were given by Mr. ***Khalil Ndiaye***, Director of the Unit for Research and Planning (CEP) of the Ministry of Maritime Economy. In his first presentation on ***strategies, as outlined in the LPS-PA, for fisheries sustainability in Senegal***, the Director of the CEP discussed the six areas of activity necessary to achieve the first goal of an LPS. This includes improving the control and management of fishing capacity; improving the regulation of access to fisheries resources; developing fishery management plans, starting with the most threatened stocks; supporting policies that include marine habitat conservation as part of an integrated management plan for coastal zones; improving fisheries research; and improving the monitoring, control and surveillance of fisheries.

In his second presentation on ***the current situation in artisanal and industrial fisheries in Senegal***, Mr. Ndiaye emphasized the contribution of marine fisheries to national GDP (1.7% of GDP in 2009 against 2% in 2006). In 2009, exports from the fisheries sector totalled around 12.5% of the total exports of the country, down from 32% in 2006. Marine fisheries contribute up to 70% of the population's animal protein intake and provide nearly 600,000 direct and indirect jobs. Between 2000 and 2005, there was a decrease of more than 13% in total fish landings, followed by a slight decrease starting in 2006 and then a drop of nearly 14% in 2010. This could be correlated with the decline of the number of active boats in the artisanal fishing industry (from 10,707 active pirogues in 2000 to 8,738 in 2010) and the number of vessels in the industrial fishing industry (from 270 fishing boats in 2000 to 120 in 2010).

The third presentation was given by Mr. ***Christopher Mathews***, Director of the USAID/COMFISH project. This presentation focused on ***the combining of biological and economic data for the development of a strategy for sustainable management of fisheries in Senegal***. The goal of the presentation was to show the need for the development of a management plan that includes and combines economic and biological data. To demonstrate this point, two situations were described. The first situation involved an open access fishery where the effort was far beyond the potential, which led to the overexploitation of resources. The second situation involved a fishery where access was controlled, which led to the sustainable use of resources. According to Mr. Mathews, it is necessary to complete a bio-economic analysis to know the exact situation of fisheries in Senegal, and this is something that could be provided by the USAID/COMFISH project as part of its activities.

The fourth presentation of the session was given by Mr. ***Jean Pierre Camille Manel***, Assistant Director of the Department of Marine Fisheries, and focused on ***the current progress in the management of fishing fleet capacity in Senegal.*** According to Mr. Camille, there are several basic requirements for the sustainable management of fishing fleet capacity:

- For industrial fisheries, it is necessary to identify all vessels operating in waters under Senegalese jurisdiction, to establish a licensing system including categories and options, to register authorized fishing vessels, to control net sizes, to freeze the granting of licenses for inshore demersal fishering, to audit fleets, etc.
- For artisanal fisheries, it is necessary to introduce fishing permits, to consolidate the registration of boats, to enforce a process of authorization for the construction of docks, to control mesh sizes, etc.

Mr. Camille emphasized the fact that there were significant achievements in the field, including the development of PACPM (which has not yet been implemented in its entirety) and the launching of the PRAO project, which aims to implement a part of PACPM (acquisition of industrial fishing vessels, training of fishermen in other disciplines, freezing of pirogue registration). Despite the advances, many of the requirements mentioned above have not yet been met, especially those involving artisanal fisheries. The current fishing capacity must be inventoried before it can be managed.

The presentations given in the first session were then discussed and comments were made. Major points of the discussion included:

- The need for additional research to improve the accuracy of fisheries statistics. Most stakeholders believe that realistic fishery policies (both industrial and artisanal) cannot be developed without reliable and comprehensive statistics, and

therefore they believe that improving research should be a main priority. The collection of statistics should also include industrial fisheries;

- A need for synergies between different stakeholders and organizations to improve the collection and sharing of information. Synergies are necessary between all institutions responsible for data collection;
- The need for improvements in the enforcement of regulations. In most cases, appropriate regulations exist but these regulations are not followed, due to a lack of enforcement by authorities and a lack of compliance by fishermen.
- The need for reliable statistics and bio-economic data, for the planning of actions in the long term (25-30 years) and for the involvement of all actors and institutions in the planning and coordination of activities;
- The need to present the proposed management model in a more understandable and accessible way in order to communicate the message to fishermen. The understanding and involvement of fishermen is crucial, as management should not only include the administration but instead everyone involved in the profession.

SESSION 2: The organizations involved in Fishery Management in the Coastal Zones of Senegal.

The second session was led by Mrs. ***Mariama Dalanda Barry***, coordinator of PRAO-Senegal. This session began with a presentation by the representative from COMO-Pêche, Mr. ***Thiam Djiby,*** and focused on ***the organizations involved in co-management in the Petite Côte and the Saloum.***

Mr. Thiam began by defining the concept of co-management as the division of responsibilities and power in fisheries management between communities and community organizations on one hand and government agencies on the other.

He then discussed the organizations or projects that are involved in co-management. This included the program GIRMAC, which targets the species most affected by overfishing. He also mentioned government organizations involved in fisheries management, including the Local Artisanal Fishing Counsels (CLPA, for Conseil Local de Pêche Artisanale) and Local Fishers' Committees (CLP, for Comité Local des Pêcheurs). A total of 30 CLPAs are planned, 22 of which are already in place. There are two types of CLPA: Local CLPAs and Professional CLPAs. Local CLPAs regroup several villages in the same geographical area

using a common fishing ground while Professional CLPAs are based in a specific fishing zone. According to the representative of the COMO-Pêche, the CLPA should be the main organization in the implementation of fishery policies.
CLPs have a private status, the same as an association or cooperative. Each CLP must be representative of the different professional mindsets in the fishing sector, and the selection of members must be made either by a general consensus or through a democratic and transparent election of voluntary candidates for the proposed positions at a General Assembly meeting, which is convened with the help of a facilitator.

The elected officials make up the CLP Office, which are organized as followed: a President, possibly a vice president, a Secretary General and his Assistant, and a Chairman for each Committee (Finance, Surveillance, IEC, Science and Technology, etc.).
The second presentation of the session was given by Mr. ***Amadou Niane,*** and focused on ***the involvement of stakeholders in the management of shrimp fisheries in the estuary of the Sine Saloum: the example of village committees (ex beach committees).***
The IUCN representative focused his presentation on the involvement of fisheries stakeholders in the sustainable management of fisheries resources. Beach committees were established throughout the Saloum Biosphere Reserve, with the support of the Fisheries Services. The creation of beach committees included three stages: the identification of the group of elders (village advisors, etc.); the identification of other important participants, based on their professional activities; and the election of representatives of each college. Each committee consists of 15 to 20 people. In the shrimp fisheries, the committee's missions are to monitor the fishermen's compliance with regulations (such as mesh size or closed seasons) and to raise awareness on issues such as mangrove deforestation and the importance of proper mesh sizes, among others.
The functional difficulties of these committees were associated with a lack of resources (boats, mobile phones, fuel), inadequate training of the supervisors responsible for enforcing regulations, a lack of supervision by technical services and absence of a legal process for the action of the committees.

Dr. Ibrahima Niamadio, Coordinator of the "Sustainable Fisheries" program at WWF-WAMER, presented ***the empirical perceptions of the Petite Côte/Saloum fishing communities (fisheries management plans/selection of priority species).*** Mr. Niamadio presented the CLPAs as well as the species selected by the communities as the target species

for the new fisheries management plans, in order of priority. According to Mr Niamadio, the selected species include: the sardinella, "thiof", "yeet", shrimp, lobster green, "cobo", sea bream, squid and mullet. He also emphasized the fact that certain donors are already funding activities which target a few of these species, including the COGEPAS project, which works on yeet (cymbium) and yeuredeu (octopus), and COMO-Pêche, which coordinates programs that work on the sustainable management of coastal shrimp fisheries.

Next, Mr. ***Momar Mbaye*** presented the ***experiences of the USAID/Wula Nafaa project: management plans for the harvesting of shellfish in the RBDS.*** The USAID/Wula Nafaa project is a natural resource management project, which, since the beginning of its second phase in 2009, has focused on the management of marine resources. The program uses a locally developed agreement as the primary tool for managing natural resources. This agreement is drawn up first by local rural communities and then validated by local authorities before being implemented. This strategy is used in the management of mollusks in the Biosphere Reserve of the Saloum Delta (RBDS) with the participation of the CLPAs of the different fishing zones. Mr. Mbaye concluded by stating that the implementation of local conventions in general and specifically the management plans for shellfish has required the development of management plans approved by the appropriate authorities, an administrative and financial organization in the CLPAs, and the creation of surveillance committees.

The ***Centre for Ecological Monitoring*** (CSE, for Centre de Suivi Ecologique) in Senegal focused its presentation on ***the use of geographic information systems (GIS) as part of the sustainable management of fisheries in Senegal***. After defining GIS, the representative of the CSE, Mr. ***Moussa Sall,*** explained the various components of GIS, how GIS works and how GIS can be used in the management of fisheries. According to Mr. Sall, GIS is an important tool for decision-makers in the analysis and visualization of the spatial distribution of different variables. The quality of the data determines the reliability of the analysis.
The expected results of this GIS work are maps of the fishing zones, including data on administrative boundaries, the location of CLPAs, CLPs, beach committees and other groups involved in sustainable fisheries management, donor projects, the exportation of goods, the migration of fishermen, fishing techniques, etc. The CSE also plans to develop an information system in the form of visualization interface which includes all of the data from the different studies.

Mr. ***Masashi Sato***, a JICA fisheries expert, focused his presentation on the ***local projects involved in the management of octopus and cymbium fisheries in the Petite Côte for sustainable exploitation of these stocks***. In his presentation, Mr. Sato said that the target species in these sustainable management projects are commercially valuable species. In addition, these species are relatively stationary (unlike fish), and stocks are limited to a certain area; this facilitates the implementation of management strategies by local people.
A few local CLPA projects on the management of these species have focused on closed periods during the octopus breeding season, on the release of cymbium juveniles (although only a thousand were released), etc.

Mr. ***Moustapha Dème***, Researcher at the Center for Oceanographic Research of Dakar-Thiaroye (CRODT, for the Centre de Recherche Oceanographique de Dakar-Thiaroye), presented the activities of the project ***"Support for the transboundary management of Mullet, the Bluefish and Meagre fisheries in Mauritania and Senegal" (Project PARTAGE).***
This project is funded by the Program for the Conservation of Coastal and Marine Areas (PRCM) in partnership with the French Development Agency (AFD, for Agence Française de Développement) and the Canary Current Large Marine Ecosystem Project (CCLME) on behalf of the IUCN. In his presentation, Mr Dème described the four components of the program and the progress that has been made through diagnostic studies of the fisheries. Several difficulties were also noted in the management of these species, according to Mr. Dème, including insufficient bio-ecological knowledge, the lack of a sustainable information system, the low value of products, and an inadequate financing system, among others.

The last presentation of the second session focused on ***the analysis of the life cycle traits of the thiof, Epinephelus aeneus in Senegal and in the sub-region: a new evaluation approach by the Laboratory of Fish Biology and Ecology in Africa West.***
This work, presented by the laboratory of fish biology and ecology in West Africa and represented by Ms. ***Khady Diouf Goudiaby***, aimed to raise awareness of the objectives and missions of the laboratory, which include conducting research, providing data for fisheries management, and supporting research and training.
Multiple doctoral theses are currently being conducted in this field, financed by the IRD. These studies include work on population genetics, the estimation of age and growth, breeding and reproductive cycles, migration, and the diets of different fish species.

According to Ms. Diouf, the thiof was chosen as the focus on this presentation due to the increasing degradation of the thiof fishery since 1985. The thiof is an endangered species that is included in the IUCN Red List. Studies on the thiof are conducted in several sites along the coast, as well as in several fish landing sites in the sub-region. It was noted that for many species, the legal capture size does not necessarily correspond to the size at first maturity, but instead to the mesh size allowed by the code of fishing. For the IFAN laboratory, these results are preliminary and it is necessary to continue research on certain aspects of thiof reproduction, specifically the differences in the reproductive cycle depending on location and environmental conditions.

These presentations sparked a general discussion which focused mainly on the following points:

- The need to clarify the difference between the CLPA, the CLV and the CLP. What is the exact role of each of these organizations? Is there any overlap in their activities? How are decisions made? Is there a communication system between organizations in order to facilitate the decision-making process? Is there a national or regional CLPA network? Are CLPAs local implementing bodies or simply advisory committees? Should CLPAs be a permanent or temporary organization?
- The need to improve the organization of CLPAs to make them functional and self-sufficient;
- The need to analyze co-management plans, in order to determine the percentage of power given to communities and to the Government;
- What are the criteria for the selection of priority species? It is necessary to have well defined selection criteria for each species and to have clear objectives in order to build synergies between different organizations (it is more important to consider the role of species in food security than its market value). In response to this question, it was explained that the choice of species was made with the CLPAs, who took into account the role of the species in income generation but also in the food security for the general population. One of the recommendations made following the discussions was to organize feedback sessions with stakeholders to validate the final stock choice and expand this activity to other CLPAs, since it has only been conducted in five sites;
- The need to establish a link between the local convention and the CLPAs. A clarification was made in that the local convention is a process led by the local

authority and approved by the local Sub-prefect. For fishing activities, management strategies are submitted to the CLPA and validated before being incorporated in the local convention. However, the USAID/Wula Nafaa project is working to establish a link between the CLPA and the local community through the commission of the environment;

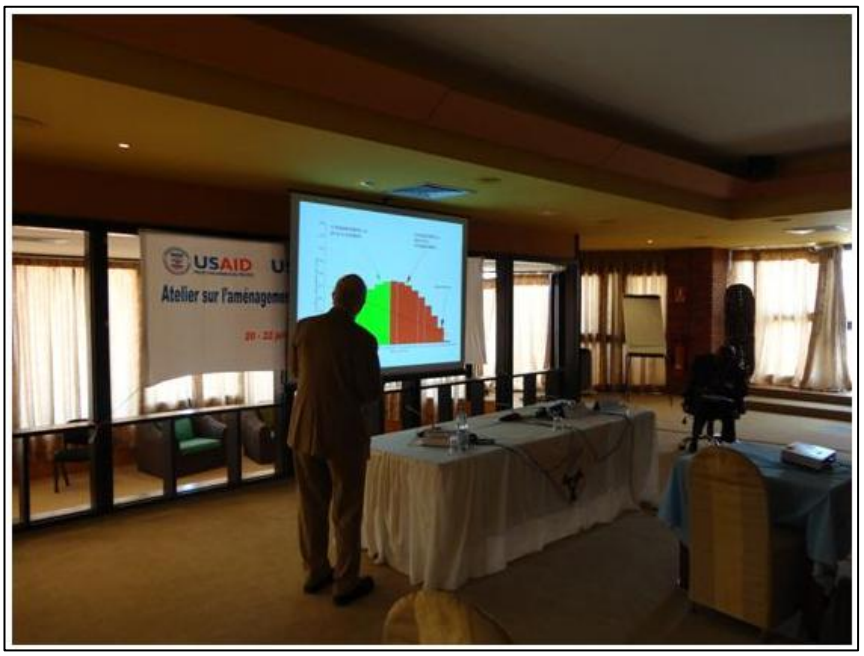
- The need to take into account issues related to climatic change in GIS development and to involve fishermen and all the stakeholders in the collection of relevant information. The success of the GIS mapping depends on the quality of the available information. The USAID/COMFISH project should facilitate the exchange of information between different partners.

Workshop Participants

DAY TWO

The second day began with the presentation by Mr. ***Christopher Mathews,*** Director of the USAID/COMFISH project, on ***Sustainable Management Units: a proposed model for the sustainable co-management of fisheries.***

The purpose of this presentation was to show that in each fishery there is a strong relationship between human ability to catch fish and the productive capacity of the stocks. Despite the many studies carried out on fishing capacity (DPM/FAO project), Senegal has not yet developed a plan for managing fishing capacity, as recommended by the FAO (1999). Therefore, it is not yet possible to objectively make a correlation between the fishing fleet capacity and the potential of the ecosystem to provide fish, although the necessary foundations for this exist today. However, it is stated in the LPS that Senegal should make an effort to significantly reduce fleet capacity in order to sustainably manage its fishery resources.



Chris Mathews of the USAID/COMFISH project, during his presentation

At the same time, several co-management organizations have been created to help support the sustainable management of fisheries in the coastal zone, with the goal of increasing productivity and landings of fishery products. These include the CLP (GIRMAC), beach committees (IUCN), CLV, etc. Local Artisanal Fishing Counsels (CLPA) were organized by the state in order to strengthen co-management. The CLPAs, most of which are not yet fully functional, regroup several committees at the village level. Despite some successes, very few CLPAs are fully functional for the following reasons: funds coming from fishing license fees are not yet available, CLPAs overlap with organizations (committees) at the village level, the use of

funds for CLPAs is not yet clear, the roles and responsibilities of the CLPA vis-à-vis the DPM are not fully understood by all stakeholders, and the relationship between the CLPA / DPM / Ministry of the Interior is not yet clearly defined.

The presenter illustrated the complexity of fisheries governance through three different figures, with the goal of highlighting the current weaknesses in the system. The USAID/COMFISH project, through this presentation, proposed ways to improve the governance of fisheries, including the implementation of Sustainable Management Units (UGD, for Units de Gestion Durable) to manage stocks in a way that takes into account the biological, socio-economic, cultural and environmental factors.

SESSION 3: Building Institutional Capacities for the Evaluation of Stocks and for Research in Senegal.

This session began with a presentation by Dr. ***Massal FALL***, researcher at the CRODT, on ***the history, mission and the current capacity of the CRODT in the evaluation of stocks.*** The CRODT representative briefly presented the mission of the CRODT, which is to improve the understanding of the marine environment, to research the bio-ecology of species, to assess resources, to improve technology, gear and products, and to research the socio-economic aspect of fisheries.

Next, he presented the current activities of the CRODT related to marine research for the medium- and long-term. These include: the evaluation of marine resources, interventions in MPAs, fish farming, and stock assessment (including both direct and indirect methods), etc.

Finally, Dr. Fall listed some strengths of the CRODT (a leader in marine research in the West African sub-region), weaknesses (the decline in human resources, absence or lack of certain specialties, the drastic reduction in financial resources, etc.) before announcing a few perspectives (the long-term funding of fisheries research).

Professor Oumar T. THIAW, Director of the Institute of Fisheries and Aquaculture (IUPA, for Institute Universitaire de Pêches et d'Aquaculture) focused his presentation on ***the history, mission and current situation of the IUPA***. During his presentation, Professor Thiaw explained the mission and the current situation of the IUPA. One of the main activities of the Institute involves the training of generalists and high-level specialists in the marine sciences. The institute is well known at the sub-regional level and receives many foreign students. Another purpose of the Institute is to conduct research on the human potential that exists in

the Institute. There exists a need for the training of teachers and researchers to enable the Institute to achieve its goal.

Professor Joe de Alteris of the University of Rhode Island (URI) introduced ***the label of eco-certification by the Marine Stewardship Council (MSC): can the MSC principles be used as a guide in Senegal and to what extent can the fishing centre of the URI assist in achieving sustainability?***

In his presentation, Mr. Alteris focused on how the principles of the MSC could be implemented with the assistance of the Centre for Fisheries of the URI. The presenter began by defining the three MSC principles of eco-certification, which include:

- P1: fisheries must be managed in a way that does not lead to overfishing or to the depletion of harvested species (maintenance and restocking);
- P2: fishing practices must respect the ecosystem functioning and productivity (including marine habitats); does the fishery have any impacts on the ecosystem functionality?;
- P3: the existence of an effective management system which complies with the laws and local and international standards and which incorporate an institutional and operational framework that allows a responsible and sustainable management of resources.

Each of these principles includes a number of criteria, details of which were given by the presenter. Mr. Alter then presented the University of Rhode Island, including its competencies and possible areas where it could provide support for the USAID/COMFISH project in its activities involving fisheries management and institutional capacity building to order to take into account issues of sustainability, of the development of awareness building programs, and of socio-economic research.

Ms. ***Kathleen Castro*** of the University of Rhode Island spoke about ***the history of URI, its current mission, and the areas where it could provide technical expertise to the CRODT, the IUPA and the DPM.*** She used the example of the "land grant/sea grant" partnership model for sustainable fishery management as a potential strategy that could be applied in Senegal.

Kathy Castro emphasized the need to take into account the changes in global fisheries and to develop effective strategies and management policies that respond to these changes in order to

preserve the remaining marine resources. These policies and strategies should focus more on managing people who use marine resources rather than managing the resources themselves. According to Ms. Castro, it is very important for all people involved in fisheries to change their behaviour to support and encourage the sustainable management of fisheries.

Next, Ms. Castro presented the "Sea Grant" program, which applies the ideas and principles of the "land grant" program (agriculture) to fisheries. The "Sea Grant" program has been used for many years by URI and facilitates the spreading of new ideas as well as a direct exchange between academics and people involved directly with fisheries. It provides the fishermen with the tools necessary to improve the management of fishery resources at the lowest possible cost.

Ms. Kathleen Castro during her speech

The following presentation focused on ***the assessment of chambo stocks in Lake Malawi*** and was given by Mr. ***Jeremy Collie*** of the Graduate School of Oceanography at URI. The goal of Mr. Collie's presentation was to give an example of the use stock assessment tools (in this case of the chambo, Oreochromis spp, in the south portion of Lake Malawi), in the sustainable management of fisheries. The Fisheries Department set up a pilot research project in an attempt to estimate the biomass and the status of the stock through the collection and organization of data on fishing efforts and catches, the standardization of catch per unit of effort to obtain index of abundance, and the adjustment of a production model using the index of abundance. This work led the fisheries department to propose measures for co-management. The co-management strategy includes a reduction in fishing efforts, the closure

of fisheries during certain periods, and the establishment of a surveillance system for fisheries.

The discussions following the presentations focused the following points:

- The model proposed by the USAID/COMFISH project (at the level of the stock) requires a collaboration between several CLPAs working on the same stock. The CLPAs must therefore be able to work together to collectively development management strategies. At an administrative level, the decision should be made at the level of the Sub-prefect, or even between regions if necessary. It is important in the context of this program to encourage the development and implementation of regulations that are effective and easy to apply;
- There is a need to establish sustainable financing mechanisms for research using a strategic plan for long-term action;
- The MSC label should be seen as a usefulness guide to help achieve sustainability. Even if the certification process is not completed, certain aspects will still be beneficial to fisheries;
- There is a need to strengthen the financial and human resources of the IUPA. One factor limiting the programs at IUPA is the lack of human resources due to high hiring costs. Additionally, it is necessary to find a way to support students.

SESSION 4: The Selection of Stocks and Sustainable Management Units for the USAID/COMFISH PROJECT

This session began with a presentation by Mr. ***Asber Mendy***, regional coordinator of the sub regional project on collaborative management of small pelagic species in West Africa, based at the Sub-Regional Fishery Commission (CSRP, for Commission Sous Régionale des Pêches). Mr. Mendy presented the management of small pelagic fish in West Africa as an example of a collaborative management and conservation strategy. In his presentation, Mr. Mendy expressed his opinion that small pelagic fish stocks should be chosen as a priority stock for fisheries management for the following reasons:

- Small pelagic fisheries in Senegal and the sub-region are very important, and play a large socio-economic role in terms of job creation and food security;

- Several studies on these small pelagic species show that resources are fully exploited or overexploited depending on the species and location, despite the potential for a significant fishery.

Given the socio-economic impact of the sector, it is important to first establish the conditions necessary for the sustainable management of resources. To do this, it is essential to implement a management plans agreed upon by all the countries of the Sub-Regional Fishery Commission.

Next, ***Kathleen Castro*** of the URI gave an example of ***developing the sole co-management plan in the Gambia.*** The project name is Ba Nafaa, which means "gift from the sea". The purpose of this presentation was to give an example of the efforts that have been made by the Ba Nafaa project in Gambia in an attempt to implement a sustainable, participative management plan for the stocks shared with Senegal (such as the sole). This plan includes the participation of all stakeholders in order to improve incomes at all levels of production.

Many steps were followed in the establishment of this co-management plan:

- Meetings were held with stakeholders to select stocks;
- Conditions were created that encourage changes in the behaviour of stakeholders to help promote the sustainable use of fisheries;
- Fishermen were trained and evaluated on sustainable fishing techniques;
- Data collection and management systems were improved.

The sole was the species targeted by this project. A national co-management committee was established to promote sole fisheries and to create conditions for the certification of these fisheries.

Mr. ***John Eichelsheim*** of IDEE Casamance focused his presentation on the ***Study of the life cycle of the shrimp Penaeus notialis in Senegal***. In his presentation, Mr. Eichelsheim emphasized the fact that the Life Cycle Analysis (LCA) of white shrimp can be an effective way to assess the environmental impacts of the fishery. The shrimp species *Penaeus notialis* and *Farfantepenaeus notialis*, known as Pink tropical prawn and Senegalese white prawn, were the species studied. This analysis covered both types of fisheries (industrial and artisanal), and the base unit of the study is a kilogram of frozen shrimp for both fisheries.

The study led to the following conclusions:

- The negative environmental impact of industrial fishing is more significant than that of artisanal fisheries;

- The most significant impacts of the industrial fishing process occurred during the processing and packaging phase;
- The use of fuel and refrigerants is very common in industrial fishing;
- It is important to encourage the use of selective gear to minimize by catch and waste;
- It is necessary to increase the size of the mesh used for the "félé-félé" and "muja" fishing nets in order to reduce the capture of juveniles.

Amadou Niane of the IUCN gave a second presentation to discuss ***the strengths and weaknesses in the management of shrimp fisheries in the Sine Saloum*.** The presenter first briefly discussed the socio-economic impacts of shrimp fishing in the RBDS, and then focused on the strengths (the diversity of stakeholders, commitments from stakeholders to support the sustainable management of fisheries, the existence of data on the bio-ecology of the species, knowledge of fishing techniques, etc.) and weaknesses (management of the fishery by sector, inadequate socio-economic data, frequency of the capture of juveniles, etc.) of this fishery.

In his presentation, Mr. ***Enrique Lopez Viega*** of the Tojero Office (in Spain) proposed ***a plan to build capacity in fisheries management in Senegal.***

After defining the action plan as a flexible, executive tool with very clear objectives, the speaker discussed the characteristics of a global economic model of an open fishery. To be successful with this type of plan, some basic considerations must be taken into account:

- The importance of the income of fishery stakeholders;
- The performance and stability of scientific research teams capable of providing scientific opinions on the state of resources;
- The inclusion of all types of fisheries exploiting the targeted stock;
- Adequate knowledge of all stocks in the targeted fishery;
- The importance of the views of all stakeholders;
- The development and implementation of a surveillance system;
- The development of an evaluation and information system to monitor progress.

In his conclusion, Mr. Lopez stressed the urgent need for Senegal to reduce fishing capacity given the alarming situation of many stocks.

The discussion that followed these presentations included the following points:

- Funding for the MSC eco certification process is a major problem, since the committees need to have the financial resources to support themselves;

- The sustainability of the MSC label depends on the client. In Gambia, the client is GAMFIDA. If GAMFIDA increase its profits (if the label is financially beneficial) GAMFIDA will be motivated to maintain certification and to update the certification process.
- The total involvement of all stakeholders is imperative for effective management plans.

DAY THREE

The third day was devoted to group work. Three groups were formed with the Terms of Reference listed below:

Group 1 : Choice of sustainable unit management units, beach committees, CLPs and GPs, in a sustainable management framework

Terms of reference for group one:

- The choice of sustainable management organizations;
- The integration process;
- Possible synergies that could be developed;
- Recommendations from the group.

Organization of the group discussions:

1. **The criteria for the selection** of management organizations depends on two possible scenarios:
   - One stock: one single CLPA whose territory covers the management unit (all stakeholders are included in the CLPA).
   - A stock shared between several CLPA: it is necessary to identify and include all CLPAs involved in the management of a stock.
2. **The integration process**
   - Include all stakeholders in the process (partners: NGOs, projects and programs);
   - Respect the principles of accountability and subsidiarity;
   - Define the roles and responsibilities of local organizations (which are validated by the CLPA);

- Inventory the different types of internal organization in the various CLPAs (branches).

3. **Possible synergies**

   It is necessary to:

   - Create synergies between several CLPAs and other projects to avoid overlap;
   - Use existing knowledge and information gathered from the activities of other projects, programs and public services.

4. **Recommendations from the group**

   - Make CLPAs fully functional in their role in the management of fisheries: only the secretaries (fisheries officers) have a coordinating role;
   - Use the results of diagnostic studies and evaluations conducted by the CLPAs (current study: FAO and PRAO) and other professional organizations;
   - Take into account the concerns related to fisheries development through co-management;
   - Make sure research is supported by the CLPA (coordinated by the DPM);
   - Develop synergies between projects to make sure the CLPAs have access to sufficient sources of information (in the field of fisheries management);
   - Improve the sharing of information and knowledge within CLPAs and between CLPAs;
   - Build the capacity of CLPAs in matters of surveillance and control.

Group 2 : selection of stocks for the USAID/COMFISH project

Terms of Reference

- Definition of selection criteria;
- Choice of stocks / site / place / level of intervention;
- Procedure and possible synergies;
- Possible recommendations from the group.

Organization of the group discussion

1. **The selection criteria of stock / species**

   Criteria were proposed by various stakeholders for the choice of priority species. Following a discussion and analysis, the group agreed to regroup certain elements to offer the following criteria for the selection of stocks:

Rubrics	**Criteria**
Economic/social/cultural	Commercial Value / Price
	Importance of local consumption
	Importance of exports
	Social importance of the species
	Production facilities
Biology (local and scientific knowledge)	Knowledge of fishermen
	Trophic level
	Reproduction/fertility
	Life phase harvested
	Growth
	Gender distribution
	Capacity to recover
	Interactions with other species
	Sedentary species
	Migratory Species
Environment	Negative effects of gear on the environment
	Sources of environmental degradation
Spatial and temporal distribution	Distribution of sites and fishing areas
Exploitation PA/PI	Potential volume of stock
	Level of interaction between fisheries (PA/PI)
Governance	Existing management plans
	Lack of management plans
	Participation of stakeholders in the decision making process
	Monitoring, control and surveillance

2. **Results from the group discussions**

After weighting the items according to their importance, the selection process was focused on seven species ranked in order of priority. This list includes the

sardinella (Sardinella) (first), the Bonga (Ethmalosa) (second), the coastal shrimp (Penaeus notialis) (third), octopus (Octopus) (fourth), the Thiof (Epinephelus Aenus) (fifth), the Yeet (cymbium) (sixth) and the green lobster (seventh) (see table in Appendix 1).

3. **Recommendations from the group**
   - Work with other fisheries stakeholders to validate the choice of species made at the workshop;
   - In all planned activities, it is necessary to establish synergies with ongoing projects and programs by looking for complementary areas;
   - In the process of implementing these synergies, it is important to organize meetings between the USAID/COMFISH project and its partners;
   - It is necessary to take into account the work of the PARTAGE project on the bluefish, meagre and mullet stocks

Group 3 : Management of fishing capacity

Terms of Reference of the group

- Describe the problems related to over capacity in Senegal;
- Identify the challenges of artisanal/industrial fishing;
- Develop strategies for managing capacity;
- Recommendations from the group;

Organization of the group discussion

1. **Capacity problems in Senegal / Strategies**

The group first defined the concept of **fishing capacity** as the **amount of catch and effort that can be produced by a ship or a fleet operating at the maximum level (ignoring limitations through management strategies)**. They then listed the problems of fishing capacity in Senegal, and identified the causes and solutions. The results of the discussion are presented in the table below:

Problems	Causes	Solutions
• Lack of a management plan for capacity	• Lack of financial resources • Lack of leadership and monitoring • Lack of political will	• Identify a leading organization (CEP) • Inform and build awareness in authorities • Create a multidisciplinary technical committee • Search for funding • Develop a management plan
• Lack of control of the fleet size at the level of the PA	• Lack of a comprehensive and regular census (currently being resolved)	• Establish a national registry of artisanal fishing units
• Lack of evaluations of the fishing fleet capacity (artisanal and industrial)	• Lack of research program on fishing capacity (currently exists for coastal demersal only)	• Develop a program of research on fishing capacity
• Lack of reliable information on the characteristics of fishing vessels	• Lack of human and financial resources • False declarations	• Strengthen the technical capacity of the control agents • Strengthen the capacity of the physical structure responsible for monitoring
• Insufficient human and material resources to manage capacity	• Inadequate workforce • Lack of expertise	•Strengthen the technical capacity of the structure's ability to manage •Recruit additional staff
• Lack of a reliable, up-to-date integrated	• Lack of political will • Multiplicity in sources of	• Establish a single collection and data

Problems	Causes	Solutions
information system at the national level	information • Diversity of methods for the collection of information	management system • Establish a committee to validate the information • Standardize the method of data collection

2. **Group Recommendations**

- Complete a diagnostic study of the current situation;
- Conduct an analysis of the information system for fisheries (PRAO);
- Increase awareness in authorities and professional organizations on the concept of capacity management;
- Build capacity in organizations involved in capacity management (DPM, IUPA, CRODT, CEP, ANAM, DPSP, PORT);
- Develop and implement a management plan for the capacity of the fleet based on stocks and the socio-economic conditions;
- Redesign a system of coordination for different stakeholders.

With the completion of the third group's presentation, the workshop on ***"Fisheries management and priority stock selection" held in Dakar from July 20 to 22, 2011*** ended.

4. CONCLUSION

A total of fifteen recommendations for fisheries management using a collaborative approach that includes bio-economic aspects were made during the workshop, which illustrates the magnitude of the challenges faced in the governance of fisheries Senegal. This demonstrates the challenge posed by a precarious socio-economic situation where the conflict between the basic needs of populations and the need for a sustainable management strategy for marine resources is lived daily by coastal communities.

At the end of this important workshop, it is up to each individual or organization – the institutional stakeholders, donors, civil society, policy makers and the USAID/COMFISH project – to make the most of these recommendations and put them in practice to the best of their ability in an effort to contribute to the development a new form of fisheries management in Senegal. The USAID/COMFISH project, in partnership with the Ministry of Maritime Economy, current programs and projects, and fishing communities will do all it can to ensure the implementation of these recommendations.

5. APPENDIXES

Appendix 1: RESULTS GROUP 2

Chart 1 : choix des espèces par sites

	Thiof	**YET**	**Sardinelles**	**Langouste**	**Cobo**	**Crevette**	**Poulpe**
Choix des sites	Tous les sites	Petite Côte et Saloum	Tous les sites	Dakar et Petite Cote	Saloum	Saloum/Casamance	Cayar à Djifere
Parte-naires/synergie	JICA/COGEPAS et IFAN	JICA/COGEPAS et GIRMAC	Projet petits pélagiques de la CSRP et IFAN	GDRH et GIRMAC	Projet petits pélagiques de la CSRP	GIRMAC et IDEE Casamance	JICA/COGEPAS, GDRH et Enda REPAO

Chart 2 : Rubrics/Criteria

Rubrics	Criteria	Points										
Economy/social and cultural		**30**	**Thiof**	**YET**	**Sardinella**	**Lobster**	**Cobo**	**Shrimp**	**Snapper**	**Cuttlefish**	**Mullet**	**Octopus**
	Commercial Value /price		3	2	2	3	1	3				3
	Importance of local consumption		1	1	3	1	1	1				1
First	Importance of exports		3	2	3	3	2	3				3
	Social importance of the species		1	2	3	1	2	1				1
	Production facilities		2	2	3	1	2	2				1
			10	9	14	9	8	10	0	0	0	9
			300	270	420	270	240	300	0	0	0	270
Biology (local and scientific knowledge)		20										
	Knowledge of fishermen		3	3	3	3	3	3				3

	Trophic level		3	1	1	1	1	1				1
	Reproduction/ fertility		1	1	3	1	3	2				1
	Life phase harvested		1	1	1	2	2	1				1
Second	Growth		1	1	3	1	3	3				3
	Gender distribution		1	1	2	1	1	1				2
	Ability to recover		1	1	3	1	3	2				3
	Interactions with other species		2	1	3	1	3	3				2
	Sedentary species		3	3	1	3	1	1				2
	Migratory species		1	1	3	1	3	2				1
			17	14	23	15	23	19	0	0	0	19
			340	280	460	300	460	380	0	0	0	380
Environment		10										
	Negative affect of machinery on the environment		3	1	2	1	1	3				2

Fourth	Sources of environmental dégradation											
			3	1	2	1	1	3	0	0	0	2
			30	10	20	10	10	30	0	0	0	20
Spatial and temporal distribution		5										
	Distribution of sites and fishing areas		3	2	3	3	3	3				3
			3	2	3	3	3	3	0	0	0	3
Fifth			15	10	15	15	15	15	0	0	0	15
Exploitation PA/PI		15										
Third	Potential stock volume		1	1	3	1	2	2				2
	Interactions between fishermen (PA/PI)		3	1	1	1	1	3				3
			4	2	4	2	3	5	0	0	0	5
			60	30	60	30	45	75	0	0	0	75
Governance		20										
	Existing				2	2		2				2

	management plans											
	Lack of management plans		1	2			3					
Second	Stackholder participation in the decision making procès		1	2	1	2	1	2				2
	Monitoring, control and surveillance		1	2	1	1	1	1				2
			3	6	2	3	5	3	0	0	0	4
			60	120	40	60	100	60	0	0	0	40
	Total	**100**	**805**	**720**	**1015**	**685**	**870**	**860**	**0**	**0**	**0**	**840**
	Classement		**5**	**6**	**1**	**7**	**2**	**3**				**4**

Appendix 2: TERMS OF REFERENCE AND WORKSHOP SCHEDULE

I. PURPOSE OF THE WORKSHOP

To identify:

- The key objectives in the management of fisheries to ensure a bioeconomic sustainability in fisheries, as mentioned in the Letter of Sector Policy (LPS) of fisheries and aquaculture (LPS-PA) of the Ministry of Maritime Economy;
- The weaknesses in the current system of fisheries management (in terms of capacity, information systems and evaluations) and steps to improve the system to enable governing bodies to provide support / advice to the Government of Senegal on issues related to sustainable fisheries management;
- All projects and activities that are currently being implemented by donors (bilateral or multilateral) in the coastal zone and fisheries of Senegal, in order to create synergies and avoid overlap;
- The potential contributions of the USAID/COMFISH project, with the URI/CRC and other national and international expertise, in an effort to fill these gaps.

II. WORKSHOP SCHEDULE

Rapporteurs: Dr Khady Sané Diouf and Vaque Ndiaye.
Location: Hotel Des Almadies.

Day 1: Wednesday July 20

08.30-09.00 Welcome Participants.
09.00-09.30 Opening Ceremonies, led by the Director of Fisheries.

SESSION 1: Bio-economics and fleet capacity management: the foundation of sustainable fishery policies in Senegal. PRESIDENT: ***Ousmane Ndiaye, DPM.***

09.30-09.50: Strategies for the sustainable management of fisheries in Senegal, as outlined in the LPS-PA, by ***Khalil Ndiaye, CEP.***
09.50-10.10*:* The current situation of fisheries in Senegal by ***Khalil Ndiaye, CEP***
10.10-10.40*:* The combining of biological and economic data for the development of a

strategy for sustainable management of fisheries in Senegal by ***Chris Mathews, COMFISH***.
10.40-11.00*:* Current progress in the management of fishing fleet capacity in Senegal by ***Camille JP. MANEL, DPM.***
11.00-11.20*:* DISCUSSION
11.20-11.40 Coffee break

SESSION 2: **The organizations involved in fishery management in the coastal zones of Senegal.** PRESIDENT: ***Mariama Barry COMOPECHE.***

11.40-12.00*:* The organizations involved in co-management in the Petite Côte and the Saloum by ***Djiby Thiam, DPM / COMOPECHE.***
12.00-12.20*:* The involvement of stakeholders in the management of shrimp fisheries in the estuary of the Sine Saloum: the example of village committees (ex beach committees) by ***Amadou Mahtar Niane, IUCN.***
12.20-12.40*:* Co-management of fishery resources and the selection of species / stocks in five priority CLPAs by ***Ibrahima NIAMADIO, WWF-WAMER.***
12.40-13.00*:* Experiences of the USAID/Wula Nafaa project: management plans for the harvesting of shellfish in the RBDS by ***Momar Mbaye, USAID / Wula Nafaa.***
13.00-13.20*:* Application of GIS tools in the sustainable management of fisheries in Senegal ***Moussa Sall and Dieynaba Seck, CSE.***
13.20-14.30*:* Lunch Break
14.30-14.50*:* Local projects involved in the management of octopus and cymbium fisheries in the Petite Côte for sustainable exploitation of these stocks, by ***Masashi Sato, COGEP / JICA.***
14.50-15.10*:* Support for the transboundary management of mullet, bluefish and meagre fisheries in Mauritania and Senegal, by ***Moustapha DEME, CRODT / ISRA.***
15.30-15.50*:* Coffee Break
15.50-16.10*:* Analysis of the life cycle traits of the thiof, *Epinephelus aeneus* in Senegal and in the sub-region: a new evaluation approach by the Laboratory of Fish Biology and Ecology in Africa West by ***Goudiaby Khady Diouf, Marine Biology Laboratory, IFAN***
16.10-16.30: Sustainable Management Units: proposed model for sustainable co-management of fisheries resources by ***Chris Mathews, USAID/COMFISH.***
16.50-17.30*:* DISCUSSION

Day 2: Thursday July 21

SESSION 3: Strengthen the capacity of institutions in terms of stock assessment and research in Senegal: PRESIDENT*:* ***Oumar THIAW IUPA***.

08.30-09.00*:* History, mission and current capacity of CRODT in stock assessment: strengths and weaknesses by ***Dr Massal FALL, CRODT***
09.00-09.20: History, mission and current situation of the IUPA, strengths and weaknesses by ***Pr. Oumar THIAW, Director IUPA***.
09.40-10.10: History of the mission of the URI, the current situation, skills and abilities that can be made available to partners of USAID / COMFISH by ***Kathleen Castro, URI / FC.***
10.30-10.50: Evaluation of Stock Chambo Oreochromis sp. Lake Malawi
by ***Jeremy Collier, URI / CF.***
11.10-11.30: Coffee Break

SESSION 4: **Selection of stocks / UDGs that the USAID/COMFISH project will work on**: PRESIDENT: ***Ousmane Ndiaye, MEM.***

12.00-12.20*:* Developing the sole co-management plan in the Gambia (Ba NAFA) ***Kathleen Castro, URI / FC***
12.20-12.40*:* Study the life cycle of the shrimp *Penaeus notialis* in Senegal: comparison between artisanal and industrial shrimp in Casamance and its impact on the environment by ***John Eichelsheim, IDEE Casamance.***
12.40-13.10: Strengths and weaknesses in the management of shrimp fisheries in the Sine Saloum by ***Amadou Niane, IUCN.***
13.10-14.30*:* Lunch
15.00-16.10*:* Plan for capacity building for fisheries management in Senegal by ***Enrique Lopez.***
16.10-17.00*:* General Discussion and formation of working groups

Day 3 : Friday July 22

DISCUSSION ON THE CHOICE OF STOCKS, UGDs, AND GENERAL RECOMMENDATIONS: PRESIDENT: ***Papa Samba DIOUF, WWF-WAMER.***

8.30-10.30*:* Participants will be divided into three groups to discuss the questions listed below and to make recommendations on actions that should be taken:

Working Group 1: Integration of UDG / CLPA / CLP / Beach Committees / GP / VC in a sustainable management system and the location of UDG / CLPA / CPL / Beach Committee / GP / VC where these organizations can be set up. PRESIDENT OF THE GROUP: ***Ousmane Ndiaye***.

Working Group 2: Selection of stocks on which the UGDs should be based. PRESIDENT OF THE GROUP: ***Alassane Samba***.

Working Group 3: Plans for the management of the fishing fleet capacity in Senegal. PRESIDENT OF THE GROUP: ***Camille Jean Pierre MANEL***.

10.30-11: Coffee break

***11-13h*: OPEN SESSION**

Discussion of recommendations proposed by each group, leading to the final conclusions of the workshop.

III. RESULTS

This workshop will lead to the production of a proceedings report summarizing the results of the meeting. This report will be shared with all participants for their comments within thirty days of its availability and will be finalized by September 15, 2011. The results of the workshop will help the USAID/COMFISH project determine which fisheries / stocks / areas / UGDs will be studied throughout the project, how to create synergies and avoid overlap between donors and projects, and how to support the DPM in the identification of policies or strategies that could help lead to the sustainable management of artisanal and industrial fisheries in Senegal.

Appendix 3: LIST OF WORKSHOP PARTICIPANTS

FIRST AND LAST NAME	INSTITUTION	FUNCTION
Moustapha THIAM	DPM	DPM Director
Camille Jean Pierre MANEL	DPM	DPM Assistant Director
Sidya DIOUF	DPM	Artisanal Fisheries Division
Khalil NDIAYE	CEP	Director CEP
Ousmane NDIAYE	MEM	Technical Inspector
Moussa MBENGUE	DPM	SDP of Kayar
Bocar BARRY	DPM	SDP of Foundiougne
El Hadji NDAO	DPM	SDP of Mbour
Ibrahima LO	DPM	IRP of Thiès
Babacar Banda DIOP	DPM	IRP of DAKAR
Saidou KANDE	DPM	Coord.and CLPA Monitor
Ibou MBODJ SANE	DPM	SDP of Rufisque
Moussa SALL	CSE	Program Officer
Dieynaba Seck	CSE	Program Officer
Babacar FALL	ENDA ENERGIE	Consultant
Jean Pascal CORREA	ENDA ENERGIE	Program Officer
Oumar T THIAW	IUPA	Director
Khady Diouf GOUDIABY	IFAN/IRD	Researcher IFAN
Matar DIOUF	ENDA REPAO	Coordinator
John EISHELCHEIM	Idee Casamance	Coordinator
Moustapha DEME	ISRA/CRODT	Researcher CRODT
Massal FALL	ISRA/CRODT	Researcher CRODT
Momar MBAYE	USAID/WULA NAFAA	Resp. Carto and Studies
Jean Michel Borie	USAID/WULA	CTP Biodiversity

	NAFAA	
Matar DIOUF	UICN	Program Leader
Amadou NIANE	UICN	Program Assistant
Mat DIA	USAID/BA NAFAA	Program Officer
ENRICO LOPEZ	COMFISH	Consultant
Modou THIAM	COMO PECHE	Expert
Djiby THIAM	COMO PECHE	Expert
Mariama BARRY	PRAO SENEGAL	National Coordinator
Makhtar THIAM	WATHUB	Coordinator
Naohiko WATANUKI	COGEPAS	Team Leader
Masashi SATO	COGEPAS	Expert in Fisheries
Mamadou THIAM	COGEPAS	Counterpart
Makoto IKEDA	COGEPAS	Technical Advisor
Astou Gaye DIOP	COGEPAS	Interpreter
Asber MENDY	CSRP	Program Officer
Abdoulaye SAMBA	FENAGIE	Support
Seynabou NDOYE	FENAGIE	Vice-president
Diebel SARR	COPEM	COPEM President
Mamadou Diop THIOUNE	COPEM	COM Leader
Calixte A NDIAYE	COPEM	Vice-president
Famara NIASSY	DAC	Director
Diène FAYE	DITP	Director
Pathé DIENG	CLPA Kayar	Member
Pape Gana GUEYE	CLPA Joal	Member
Joseph SARR	CLP Foundiougne	President
Ablaye NDIAYE	CLPA Sindia/Mbour	Member
Ibrahima MAR	CLPA Rufisque/Bargny	Member
Aminata MBENGUE	APTE/ENVIPÊCHE	Program Officer
Kathleen CASTRO	URI Fisheries Center	Co-Project Manager
Caroline A. KARP	Center for environmental Studies, Brown University	fisheries social anthropologist
Joe De ALTERIS	URI Fisheries Center	Sea Grant methods, and

		sea survey techniques
Jeremy COLLIER	URI Fisheries Center	Stock assessment, population dynamics and modeling
Najih LAZAR	URI Fisheries Center	URI/ FC fishery scientist field assessments S. scale fisheries
Pape Samba DIOUF	WWF-WAMER	Coordinator
Ibrahima NIAMADIO	WWF-WAMER	Program Officer
Aaron BROWNELL	USAID/Economic Growth Office	Alternate Agreement Officer Technical Representative (AAOTR), NRM Officer/
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