Gambia-Senegal Sustainable Fisheries Project (USAID/BaNafaa)

FINAL REPORT

May 1, 2009 – April 30, 2014

(LWA Associate Award No. 624-A-00-09-00033-00)

A partnership of:

United States Agency for International Development / West Africa
Coastal Resources Center, University of Rhode Island
World Wide Fund for Nature, West Africa Marine Program Office
Department of Fisheries, The Gambia
Ministry of Fisheries and Water Resources, The Gambia

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1. Introduction

The USAID/ BaNafaa project was a five-year $3.4 million regional initiative supported by the American people though the U.S. Agency for International Development (USAID)/West Africa Regional Mission. It was implemented through the University of Rhode Island (URI)-USAID cooperative agreement on Sustainable Coastal Communities and Ecosystems (SUCCESS). The World Wide Fund for Nature West Africa Marine Program Office (WWF-WAMPO) was a regional implementing partner. Local partners included TRY Oyster Women's Association (TRY), the National Sole Co-Management Committee (NASCOM), and the Water Resources Laboratory. At the end of Year 2, Water, Sanitation and Hygiene (WASH) and Climate Change funding was added to the award in addition to previous fisheries activities under USAID's biodiversity initiative. URI worked with local partners the Trust Agency for Rural Development (TARUD) and The Gambian Agency for Public Works (GAMWORKS) to implement WASH activities and a bilateral Climate Change Vulnerability Assessment was coordinated by WWF in Year 3. All project activities were carried out in partnership with the Department of Fisheries (DoFish) and stakeholders in the fisheries sector in The Gambia and Senegal. The focus was on sustainable fisheries management including the shared marine and coastal resources between The Gambia and Senegal. However, most field activities were in The Gambia. The Gambia - Senegal Sustainable Fisheries Project contributed directly to the achievement of the USAID West Africa Regional Office of Environment & Climate Change Resilience (ROECCR) Results Framework through contributions to multiple Intermediate Results.

An external mid-term evaluation of the project was conducted in late 2012. The Final Report in February, 2013 concluded that, "Through the mid-term, BaNafaa has achieved significant results, which is a highly commendable accomplishment, given the numerous institutional constraints to fisheries sector development in The Gambia. This evaluation's overarching recommendation is to continue BaNafaa's overall program approach due to its successful results in a challenging environment." In 2012, URI submitted a cost-extension proposal to implement climate change adaptation measures developed based on the vulnerability assessment, to address additional unmet WASH needs at fisheries landing sites identified during the initial WASH needs assessment and to strengthen and expand on significant achievements in fisheries co-management. USAID did not act on the proposal, so the focus of the final year of the USAID/BaNafaa project was to consolidate key achievements and prepare for sustainability of the successful governance systems established with project assistance.

This final project report describes Life of Project accomplishments, measures taken during project implementation to reinforce the sustainability of accomplishments and priority next steps identified by stakeholders to continue building on project achievements.

1.1 Background

In West Africa, an estimated 1.5 million tons of fish are harvested annually from the region's waters, with a gross retail value of US$1.5 billion. In The Gambia and Senegal artisanal fisheries make up a majority of the fisheries landings and contribute significantly to income

generation and local food security for coastal communities and for many communities inland where fish are traded. Some 200,000 people in the Gambia and 600,000 in Senegal are directly or indirectly employed in the fishing sector. Seafood products are a leading export of the region and generate as much as 20% of the gross value of exports. While the majority of seafood exports are destined for European Union (EU) markets, a growing volume of trade goes to the U.S. and other countries in the region.

Fish provides the main source of animal protein for the average rural family in the sub-region, where annual fish consumption can be as much as 25kg per capita. In many rural areas, fishing serves as a "social safety net" when farming turns unproductive due to depleted soil, drought, disease, or other factors.

In addition to direct socioeconomic benefits derived from fishing, a well-managed sector can benefit other aspects of the region's economy and quality-of-life. This includes a growing tourism sector and a number of globally and regionally significant natural heritage areas. With annual tourist arrivals surpassing 120,000 in The Gambia and 400,000 in Senegal, a growing number of tourists are taking advantage of the countries' ecologically significant reserves, parks, and protected areas—most of which have direct links to the fate of well-managed fisheries. These include but are not limited to the Sine-Saloum Delta Biosphere Reserve in Senegal and in The Gambia the Niumi National Park, the Baobolon Wetland Reserve, and the Tanbi Wetland Complex—all are designated Ramsar sites and contain globally significant wetlands.

The Gambia's fisheries sector operates under the authority and responsibility of the Minister of Fisheries and Water Resources, through the Department of Fisheries (DoFish). The policy, legal and management framework for fisheries in The Gambia is provided by the 2007 Fisheries Act and the 2008 Fisheries Regulations. A draft Fisheries Management Plan for shrimp, sardinella and sole fish was prepared in 2009. The Fisheries Act mandates a Fishery Advisory Committee and Community Fisheries Centers as the institutional structure for inclusive oversight of the sector and also allows for decentralized fisheries co-management. The policy objectives of the fisheries sector as articulated in policy documents include:

- Rational and long-term utilization of the marine and inland fisheries resources
- Improving nutritional standards of the population
- Increasing employment opportunities in the sector
- Increasing foreign exchange earnings
- Increasing and expanding the participation of Gambians in the fisheries sector
- Improving the institutional capacity and legal framework for the management of the fisheries sector

The policy objectives of the fisheries sector are linked to key national development objectives that include: increased food self-sufficiency and security; a healthy population and enhanced employment opportunities for nationals; increased revenue generation and foreign exchange earnings; and the attainment of national social and economic development. They are designed to support key national development objectives as outlined in the Poverty Reduction Strategy Paper and The Gambia Incorporated Vision 2020, which are blueprints for national development and eradication of poverty.

Enabling Conditions

The Gambia is the only country in West Africa that has enacted a fisheries legislation that makes it possible to adopt and implement a fisheries co-management plan under the Ecosystem-Based Fisheries Management (EBFM) approach, including use rights. The Fisheries Act of 2007 is comprehensive legislation that addresses national as well as international fisheries issues in a holistic manner incorporating the FAO Code of Conduct for Responsible Fisheries and other relevant international fisheries conventions and protocols to which the country is a member or has assented to. Thus, a strong legal basis for the implementation of a co-management regime was already in place. The top-down approach to fisheries management is a thing of the past; The Gambian government recognizes that the fisherfolk and their communities should fully participate in all aspects of fisheries management including decision-making.

1.2 Program Goal and Intermediate Results

The goal of the USAID/BaNafaa Project was to support the Government of The Gambia in achieving its fisheries development objectives by contributing to the following vision:

> *Artisanal fisheries and coastal ecosystems in The Gambia and selected stocks shared with Senegal are being managed more sustainably, incorporating significant participation of fisherfolk in decision-making, and attaining improved economic benefits for both men and women involved in the market value chain.*

USAID/BaNafaa built on the on-going efforts of the Department of Fisheries in The Gambia, working with several community fisheries centers and their management committees to improve fisherfolk involvement in the management of fisheries resources. More specifically, to further the development and implementation of the draft fisheries management plan for sole and other selected species. Sole is an important export commodity so this involved partnerships with export processing businesses as well. This is also a shared stock with Senegal. As gender equity was another important aspect of the project, USAID/BaNafaa benefitted both men and women in the fisheries sector by also working with oyster harvesters—a women-dominated fishery whose importance is often under-recognized.

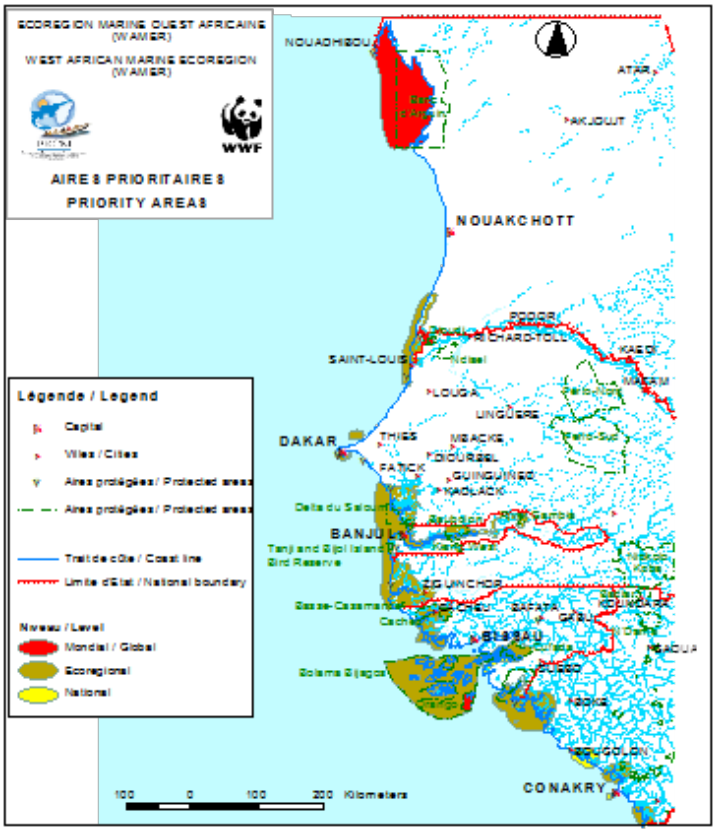
Intermediate Results for the USAID/BaNafaa Project:

- IR 1: Strategies to increase social and economic benefits to artisanal fishing communities, and otherwise create incentives for a sustainable fisheries agenda in the WAMER identified, tested and applied
- IR 2: Institutional capacity strengthened at all levels of governance to implement an ecosystem-based, co-management approach to sustainable fisheries, and to prevent overfishing
- IR 3: Nursery areas and spawning areas for critical life stages of commercially important species and for associated marine turtles and mammals are protected
- IR 4: Change unsustainable and destructive marine resource use practices that threaten improved biodiversity conservation in the West Africa Marine Ecoregion

Project Strategies

- A participatory co-management approach that engages fisherfolk in decision-making.
- An ecosystem-based approach that looks not only at the fish, but protection of critical habitats and reduction of fishery impacts on threatened marine species
- Mainstreaming gender dimensions that provide opportunities for both men and women to benefit economically and participate in decision-making.
- A threats-based approach to coastal and marine biodiversity conservation.

Geographic Scope. The Project concentrated its activities on the marine and coastal resources and fisheries stocks shared among the Casamance, the Gambia River and Saloum Delta region—an area of regional biodiversity significance (see Figure 1). The majority of on-the-ground activities occurred in The Gambia, where USAID/BaNafaa focusesd on the artisanal nearshore fisheries along the Atlantic coastline as well as the estuarine- and mangrove-dominated portions of The Gambia River (see Figure 1). A sister project in Senegal, called the Wula Nafaa project, worked on fisheries management in the Saloum Delta and Casamance River. Together, these two USAID-supported initiatives are expected to have a significant impact on improved management of this biodiversity-rich area.



Figures 1 and 2. (left) The Gambia River Estuary and Atlantic Coast and (right) Areas of Biodiversity Significance in the WAMER

2. Life of Project Accomplishments

The USAID/BaNafaa project made transformative contributions to the above stated project goal and Intermediate Results within the project's 5 year timeframe (see Table 1).

Table 1. Transformative Changes Attributed to the USAID/BaNafaa Project

Start of the Project	End of the Project
The Sole Fishery	
No management plan	Management plan developed, formally adopted and gazetted
No co-management institution	National and landing site committees established and active
No use rights	Exclusive use rights granted
No closed season	6 month closed season instituted 1NM along the shoreline
Small mesh size (80mm)	Mesh size increased to 92mm to prevent growth overfishing
No stakeholder involvement in surveillance and enforcement	Co-Mgt. committee actively conducting surveillance and enforcement and collecting fines from offenders
No Stock assessments conducted	Annual stock assessments produced and used for management decision making
Overfishing of the two primary species	No / minimal overfishing occurring
No bilateral discussions on joint management of the sole fishery	The Gambia and Senegal stakeholders actively discussing joint management of sole stocks in the region
No discussion of managed access	Mauritania access fee system being reviewed by Co-Mgt. committee for possible adoption in The Gambia
The Oyster and Cockle Fishery	
No management plan	Management plan developed, formally adopted and gazetted
No co-management institution	National association and member communities identified, expanded and active
No use rights	Exclusive use rights granted
No closed season	8 month closed season instituted
Open access	Designated exclusive zones for member communities
No minimum size limit	25mm minimum length for cockles, 6cm for oysters
No gear restrictions	Only the axe allowed to remove oysters from mangrove roots. Prevent harvest of small oysters and reduces mangrove damage
No Stock assessments conducted	Annual data collection by users for management decision making
No bilateral discussions on joint management of the shellfish fishery	The Gambia and Senegal stakeholders actively planning joint management of shellfish in shared estuaries.

Over the project timeframe, ecosystem-based, co-management plans to more sustainably manage targeted stocks (sole and oysters and cockles) were developed with strong participation from fisherfolk (both men and women) and have been implemented. The USAID/BaNafaa project has been the most significant partner of The Gambian Government and fisheries stakeholders in this

effort. For the first time in The Gambia, fisheries use rights were granted to co-management institutions by the national government and were formalized following the Gambian public notice and gazetting process. In the case of the oyster and cockle fishery, it is the first time a women's association has been granted exclusive use rights to a fishery in Sub-Saharan Africa. Although not an objective of the project, The Gambian sole fishery may eventually be the first artisanal fishery in Sub-Saharan Africa to achieve Marine Stewardship Council (MSC) certification (if it is successful). The co-management plan and use rights are a key mechanism for meeting and maintaining that standard.

A combined 127,549 hectares in areas of biological significance are under improved natural resource management as a result of the project.

Positive trends documented for improved biophysical conditions within areas under improved management.

A specific target was not set for the project's goal level indicator of improved biophysical conditions within areas under improved management. However, tracking of the status of the sole stock over the Life of the Project has shown a positive trend towards reduced overfishing and declining fishing mortality for Red and Black Sole (*Cynoglossus senegalensis* and *Synaptura cadenati*) (see Table 2 and Figure 3).

Table 2. Summary of Sole Stock Assessment Results over the Life of the Project

Fish Species	Year[1]				
	2008	**2011**	**2012**	**2013**	**2014[2]**
Red Sole	Not overfishing	Overfishing	No growth overfishing Recruitment overfishing	No growth overfishing Recruitment overfishing	No growth overfishing No recruitment overfishing
Black Sole	Not overfishing	Overfishing	Overfishing	Overfishing	No growth overfishing Slight recruitment overfishing
Catfish[3]	No data	No data	No data	Growth and recruitment overfishing	No data

[1] Summary of Stock Assessments for Gambian Sole 2008, 2011, 2012, 2013 http://www.crc.uri.edu/download/USAIDBaNafaa_SummaryofStockAssessments_508.pdf
[2] Ceesay and Jallow 2014 (Draft).
[3] K. Castro, Jallow, A. and S. Cessay. 2013. Description and analysis of the Gambia catfish stock assessment- 2013, pp 10 http://www.crc.uri.edu/download/GambiaCatfish_stock_assessment5081.pdf

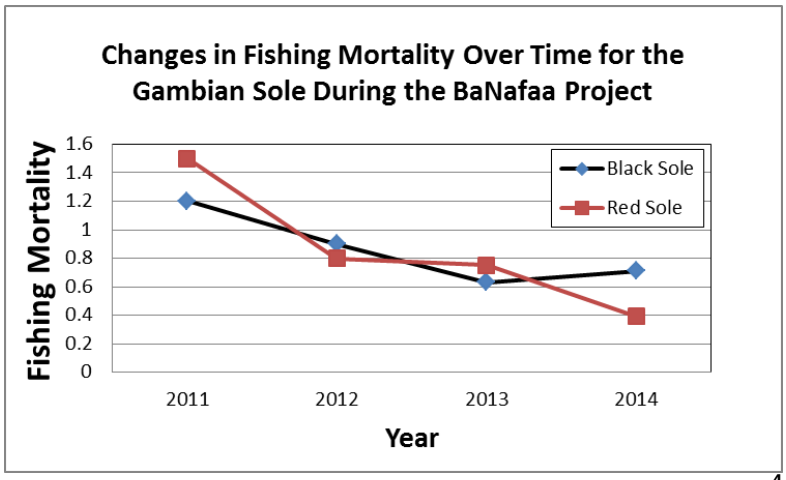


Figure 3. Declining Fishing Mortality for Red and Black Sole[4]

These trends are encouraging as implementation under the new management scenarios has been underway for less than two harvest seasons and a recent amendment to further increase the minimum allowable mesh size went into effect only on May 1, 2014 following the above 2014 data collection.

For the oyster fishery (*Cassostrea gasar/tulipa*), stock assessments are not conducted and the project did not repeat the PRA done at baseline. However, a point of sale sampling protocol conducted by TRY under the project produced preliminary results that show oyster size is not declining significantly over the 4 month harvest season at most sites.[5]

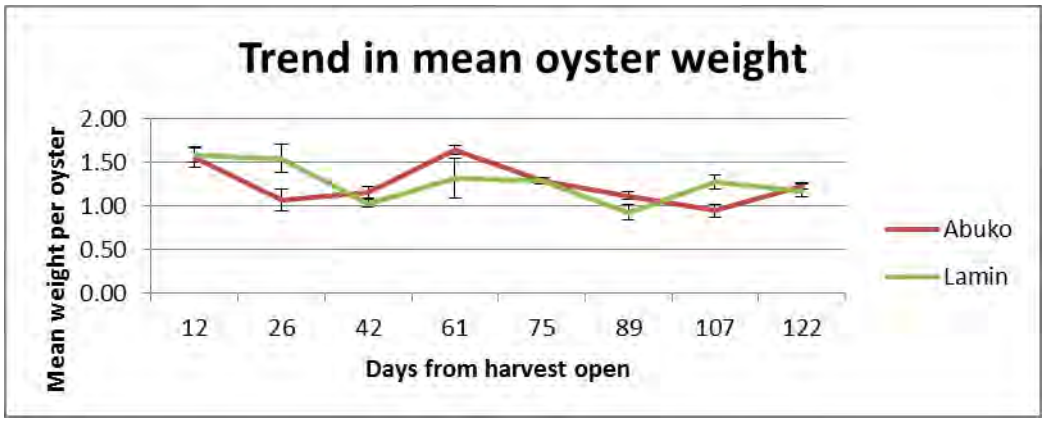


Figure 4. Average size of oysters from Abuko and Lamin market samples over the 4 month open season. Four of six sites sampled (including Abuko and Lamin) had no significant decline.

This indicates that the stock is not being depleted during the harvest season. More annual datasets are needed to draw strong conclusions about trends on improved biophysical conditions. In spite of challenges with data availability and quality, the project resulted in significantly improved availability of data for management decision-making including:

- Improved capacity for and availability of regular stock assessments in the sole fishery

[4] Ceesay and Jallow 2014 (Draft) and Summary of Stock Assessments for Gambian Sole 2008, 2011, 2012, 2013 http://www.crc.uri.edu/download/USAIDBaNafaa_SummaryofStockAssessments_508.pdf .
[5] Development of Sustainability Criteria for the Oyster Fishery in The Gambia (2014) forthcoming

- Increased demand from users for stock assessments and research of various types
- Broadened the range of actors contributing to data collection to include the private sector (processors) and the co-management institutions (users)

Finally, anecdotal information strongly indicates that fisherfolk in both the sole and oyster fisheries perceive an improvement in the status of the stock due to the new management measures. Demand for geographic expansion of the plans from fishing and oyster harvesting communities not covered (The Gambia River and the North bank and transboundary areas with Senegal) is high and attests to the success of project interventions. Broad-based buy-in for sustainable fisheries management governance mechanisms such as those developed and put into practice by stakeholders under the USAID/BaNafaa project is an important project legacy. It will be critical as pressure on these fisheries from open access fishing effort remains a challenge.

The sections below provide more detail on project accomplishments by Intermediate Result. See Appendix A for The Project Results Framework, Indicator Results Tables, Life of Project Targets and Achievements.

2.1 Intermediate Result 1:

Strategies to increase social and economic benefits to artisanal fishing communities, and otherwise create incentives for a sustainable fisheries agenda in the WAMER identified, tested and applied.6

Key Achievements: The Sole Fishery

- A participatory, eco-system-based Fishery Co-Management Plan for The Gambia Sole Complex approved in January 2012 and gazetted in December 2013, finalizing the process of making it a legal, enforceable plan and resulting in:
    - ***121,245 ha under improved management*** (the Atlantic coast of The Gambia out to 9 nautical miles).
    - ***Exclusive use rights*** to the sole and marine catfish fishery within this zone granted to The National Sole Co-Management Committee (NASCOM).
    - ***Management measure***s including:
        - annual seasonal closure of one nautical mile from the coastline from May 1 to October 31 for all fish species and gear types
        - a minimum fish size
        - a minimum mesh size
        - a ban on use of drift nets for The Gambia River mouth
    - ***Monitoring and enforcement with stakeholder cooperation*** and NASCOM receiving and managing 100% of the revenue from fines. Seven violations resulted in $900 in fines paid to NASCOM in 2013.
    - ***Adaptive Management.*** The plan is based on research of Local Ecological Knowledge (LEK) and Scientific Knowledge (SK) conducted with stakeholders. New research continued after approval of the plan was reviewed at 2 consecutive annual stakeholder meetings. Findings resulted in an amendment to strengthen the plan's management measures, adding marine catfish and increasing the minimum allowable mesh size.
    - ***Climate Change*** considerations included as part of the plan's research and adaptive management agenda.

- NASCOM established and its capacity developed as the Sole and Marine Catfish fishery co-management institution.

- The Private Sector engaged:
    - German Seafood Company Kaufland donated 100,000 Euros to NASCOM raised through a consumer campaign in Europe to support progress towards Marine Stewardship Council certification.
    - Demonstrated commitment by Atlantic Seafood Company in The Gambia to collect and share data for stock assessment.
    - MSC featured The Gambia sole fishery in print and video material as a case study for data-deficient, developing country fisheries engaged in the certification process.

[6] Note that the Co-Management Plans and most of the other activities described under IR1 also contribute to IRs 2, 3 and 4. Likewise, some of the activities described under IR2 also contribute to IR1.

Key Achievements: The Sole Fishery (Continued)

- Stakeholders engaged in transboundary fisheries management:
  - Annual Bi-lateral (Gambia-Senegal) Sustainable Fisheries Co-management Meetings conducted in 2012 and 2013.
  - A Comparative Cost Study of the Sole Fishery (Gambia-Senegal).

- Fishing communities in the Gambia River and on the North bank demanding expansion of participatory, ecosystem-based co-management plans to cover their areas.

Key Achievements: The Oyster and Cockle Fishery

- A participatory, eco-system-based Cockle and Oyster Fishery Co-Management Plan for the Tanbi Wetlands National Park approved in 2012 and gazetted in December 2013, finalizing the process of making it a legal, enforceable plan and resulting in:
  - ***6,304 ha under improved management*** (the Tanbi Wetlands National Park, a RAMSAR site).
  - ***Exclusive use rights*** to the oyster and cockle fishery within this zone granted to The TRY Oyster Women's Association (TRY).
  - ***Management measures*** including:
    - an 8 month annual closed season from July 1 to the end of February
    - a minimum shellfish size
    - gear restrictions to reduce damage to mangroves
    - harvest areas reserved exclusively for individual TRY member communities
  - ***Monitoring and enforcement*** with fines managed by the TRY community where the violation occurred.
  - ***Adaptive Management.*** The plan is based on research of Local Ecological Knowledge (LEK) and Scientific Knowledge (SK) conducted with stakeholders. New research and implementation challenges are reviewed annually by stakeholders. In 2013, shortening the closed season was considered and rejected.
  - ***Climate Change*** considerations included as part of the plan's research and adaptive management agenda.

The first case in Sub-Saharan Africa of a women's association granted exclusive use rights to a fishery by a national government.

- TRY's capacity developed as the oyster and cockle fishery co-management institution.

- TRY delivered integrated programs to respond to multiple, interlinked needs of members.

- Value chain improvements resulted in more than doubling of the price/kg for oysters due to the larger size and improved hygiene, handling and marketing of the product.

Key Achievements: The Oyster and Cockle Fishery (Continued)

- Eight Gambian institutions formalized collaboration in an inter-agency MOU to develop a National Shellfish Sanitation Plan (GNSSP). Water quality zones were mapped based on 3 years of data and regular shoreline sanitation surveys at more than 15 shellfish harvesting sites. A final GNSSP would make The Gambia only the second country in Sub-Saharan Africa with such a plan, serving as a model for developing countries striving to sustainably manage shellfisheries by improving the quality and value of their product.

- Stakeholders engaged in transboundary fisheries management. TRY is leading a joint oyster and cockle co-management planning process in the shared Allahein River estuary on The Gambia border with southern Senegal, based on strong community demand.

- Additional oyster and cockle harvesting communities in The Gambia demanding expansion of participatory, ecosystem-based co-management to cover their areas.

Key Achievements: Crosscutting

- More than 1,962 people trained in natural resources management, biodiversity conservation and climate change and 1,330 people with increased economic benefits derived from sustainable natural resources management and conservation due to U.S. Government assistance.

- 23,175 people with improved access to sanitation facilities and 11,663people with improved access to water facilities at 6 fisheries landing/oyster harvesting sites.

- Eight community WASH committees established and trained to promote sanitation and hygiene behavior change and to sustainably manage WASH activities through WASH management plans based on banning open defecation and collecting user fees.

2.1.1 Effective Sole/Multispecies Marine Catfish Fishery Co-Management Plan

The principal strategy identified, tested and applied by the USAID/BaNafaa project to increase social and economic benefits to artisanal fishing communities, and otherwise create incentives for a sustainable fisheries agenda in the WAMER has been participatory, ecosystem-based, rights-based co-management.

The project was successful in supporting Gambian stakeholders to develop and apply this strategy in the sole fishery over the five year project timeframe. As summarized above, management of the sole fishery has undergone transformative change as a result. Key achievements and the important elements of project support for the sole fishery co-management planning process were as follows:

1. An approved and gazetted Sole Fishery Co-Management Plan.

Approval, signature and, finally, gazetting of the sole co-management plan were important milestones in the process that officially delegated use rights and management responsibilities for the sole fishery out to 9 nautical miles from the Atlantic shoreline to NASCOM (see Figure 5 below). The Plan was gazetted on December 19, 2013, almost 3 years after approval. Gazetting finalized the process of making it a legal, enforceable plan. It is significant that The Gambia accomplished this step. Many case studies from around the world show that gazetting is often not achieved even when fisheries management plans are approved.

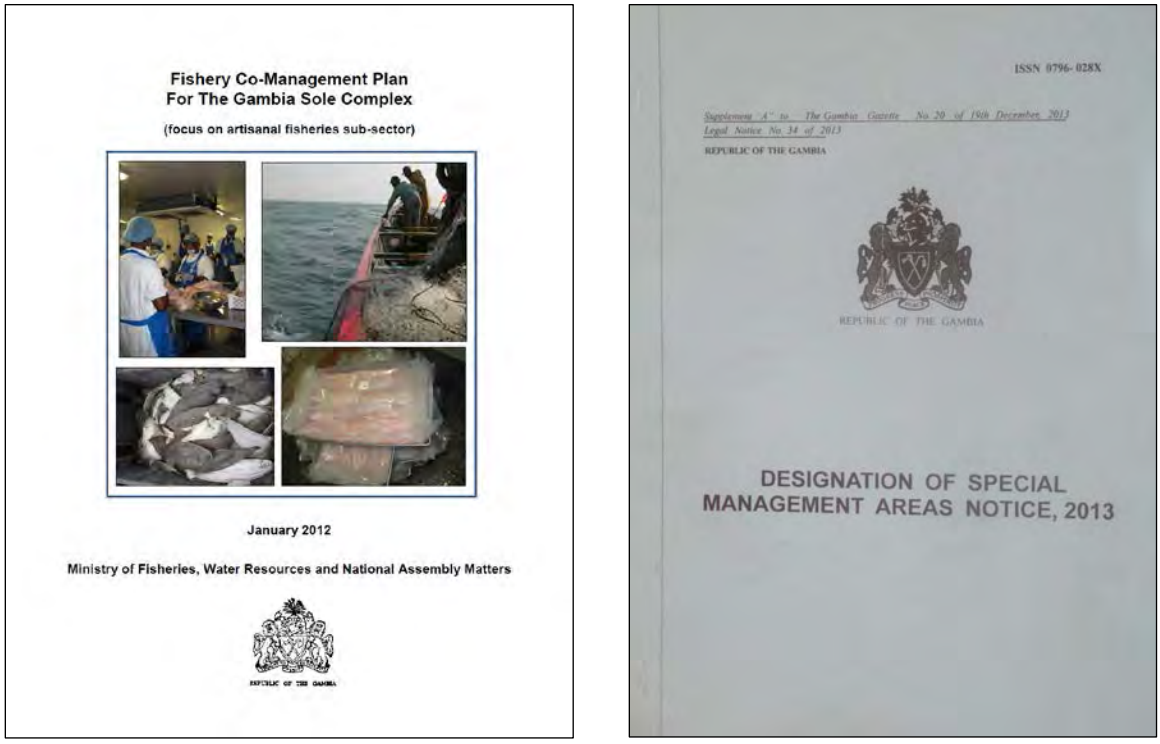


Figure 5. (from left) The approved Sole Co-Management Plan (2012) and the Gazetted Sole and Oyster and Cockle Fishery Co-Management Plans (2013)

2. A participatory, eco-system-based process capitalizing on local and scientific knowledge

Beginning in the first year of the project meetings, trainings, exchange visits and action research activities were conducted with stakeholders at all levels, including fishermen, artisanal and industrial processors, local authorities, village leaders and representatives, landing site and central office DoFish staff and decision-makers at the Ministry level. The Table of trainings conducted over the Life of the Project (LOP) in Section 5.4 below provides an overview of the training provided. It ranged from landing site trainings with fisherfolk in The Gambia, to exchange visits in Senegal, to fish biology training for DoFish landing site staff, to fisheries leadership training for institutional partner representatives at URI/CRC.

Figures 6 and 7. (left) Project Manager Ousman Drammeh on the study tour to Cayar Senegal. (right) Mapping Local Ecological Knowledge (LEK) with fishermen.

Action research and stock assessments conducted with stakeholders included the following:

- Length-weight relationships and condition factors of Red sole and Black sole from The Gambia (2010)
- Bycatch Assessment in the Gambian Sole Bottom Gillnet Fishery (2010-2011)
- Sole Fishery Value Chain Assessment (2010)
- Identification of the Sole Resources of The Gambia (2011)
- Characterization of the Sole Fishery in The Gambia (2011)
- Use of Local Knowledge: Application to the Management of the Sole Fishery in the Gambia (2011)
- Effect of Hanging Ratio on the Catch of Red Sole, Black Sole and Catfish in The Gambian Bottom Set Gillnet Fishery (2012)
- Guide for the Identification of Commonly Caught Fish in the Bottom Set Gillnet Fishery in The Gambia (2012)

- The Use of Local Knowledge–Application to the Management of the Catfish Fishery in the Gambia (2012)
- Catch Comparison of two mesh sizes in the bottom gillnet used in the Gambian sole fishery (2013)
- Marine Catfish Longline Hook Size Study (2014), forthcoming.
- Summary of the Stock Assessments for Gambian Sole: 2008, 2011, 2012, 2013 (2013)
- Description and Analysis of The Gambia Catfish Stock Assessment (2013)

Figure 8. Fishermen participating in the bottom set gillnet study

The combination of training and action research engaging stakeholders at all levels created the enabling conditions for participatory, ecosystem-based decision-making for sustainable management of the sole fishery. It enabled stakeholders to agree on common objectives and approaches, while it also validated the contributions of both local and scientific knowledge to the process, resulting in broad-based ownership of management and governance decisions for the fishery.

3. Adaptive Management

The process described above also served to institutionalize the concept of adaptive management through continuous research and regular review of the findings to consider changing conditions and new information. In addition to a research agenda, the Sole Co-Management plan includes procedures that call for an annual stakeholder review meeting. Following approval of the Plan in January 2012, with assistance from the USAID/BaNafaa project NASCOM hosted two annual review meetings, one in October 2012 and one in November 2013. Findings from new research

were presented and discussed at these meetings and resulted in an amendment to the Sole Plan in December 2013 to increase the minimum allowable mesh size from 80mm to 92mm and to integrate marine catfish into the scope of the plan. Expanding the plan to include multiple demersal species caught with the same gear as sole was an important development in the context of an ecosystem based approach and sets the stage for additional demersal species to be added in the future.

Figure 9. Women at Bakau landing site preparing the day's catfish catch for sale and processing. The Sole Co-Management Plan was amended to include marine catfish in 2013.

Project supported research on marine catfish also revealed that in recent years longlines with hooks are surpassing bottom set gillnets as the most frequently used gear for catfish. Although the USAID/BaNafaa project was ending, based on strong demand from stakeholders, the project supported a final action research effort led by NASCOM to examine the relationship between longline hook size and the size of catfish caught. Field data was collected in March/April 2014 and the findings will likely result in another (post USAID/BaNafaa project) amendment to the sole plan to specify a minimum hook size for marine catfish.

Stakeholders have clearly appropriated the adaptive management approach and are highly motivated to continue to identify and conduct participatory research and apply the findings to management decision-making. As stakeholders in The Gambia's sole fishery consider how to transform management from open access to limited access and as climate change and ocean acidification continue to impact fisheries, this approach will be critical. It may be one of the most important legacies of the USAID/BaNafaa project.

4. The co-management institution (NASCOM and associated LACOMs) established, operational and continuing to develop capacity.

As the co-management planning process began and evolved in the early years of the USAID/BaNafaa project, sole fishermen, processors and other stakeholders in the sector at the

principal sole landing sites along the Atlantic coast of The Gambia, including NAAFO and GAMFIDA, formed Landing site Co-Management Committees (LACOMs). These seven sites are Gunjur, Brufut, Sanyang, Tanji, Batokunku/Tujereng, Bakau and Banjul. A national level apex organization, the National Sole Co-Management Committee (NASCOM) was also formed. Both NASCOM and the LACOMs developed by-laws and elected officers. In 2012, NASCOM with its associated LACOMs was designated in the approved sole co-management plan as the Co-Management institution and was delegated exclusive use rights to the sole fishery in the special management area out to nine nautical miles from the Atlantic shoreline. To better carry out its mandate as a co-management institution, NASCOM officially registered as an Association with the Government of The Gambia in 2012.

NASCOM Vision

"Our Sole, Our Wealth and Our Lives"

- *Responsible and safe exploitation of sole fish for conservation, management, protection and development of the fisheries resources for now and the future generation.*
- *Conservation and sustainable management of the sole fishery to enhance food production, poverty reduction, and improve livelihoods of fishing communities.*

With project support through seed grants and technical assistance, NASCOM strengthened its institutional capacity as follows:

- Developed a Constitution
- Developed LACOMs by-laws and harmonized them with the national level NASCOM by-laws.
- Registered with the Govt. of The Gambia.
- Established an office at the Bakau landing site including furniture and IT equipment
- Opened a Bank account
- Developed a Standard Operating Procedures (SOP) Manual
- Developed a Business Plan
- Benefitted from financial and administrative management training
- Conducted outreach to landing sites and surrounding communities on the approved Co-Management Plan and its management measures (see Figure 10 below)
- Demarcated the 1 nautical mile closed area with 42 locally made spar buoys to determine if this low cost option would be effective (see Figure 11 below).
- Monitored and enforced the closed area and the Plan's other management measures (see Figure 11 below)
    - Engaged other actors (Police, Military, Sea Rescue, DoFish, Alkalos, etc.)
    - Managed the fines collected ($900 in 2013)
- Hosted annual Co-Management Plan stakeholder review meetings in 2012 and 2013
- Hosted annual bilateral (Gambia-Senegal) Co-Management meetings in 2012 and 2013 (See IR2 below for more detail).
- Conducted research to inform fisheries management decision-making
- Advocated to the Ministry of Fisheries for support on issues of importance to its constituents.

- Engaged with the private sector in The Gambia (Atlantic Seafood, a processor) to contribute data for stock assessments and in Europe (German retailer Kaufland) to support The Gambia's effort to obtain MSC certification of the sole fishery.

Figure 10. Outreach site meetings: Participants included LACOMs, the Department of Fisheries and its Extension Unit, Security personnel (Military, Sea Rescue and the Police), Alkalos, Councilors, and Village Development Committee (VDC) representatives.

Figure 11: Spar buoy deployment to demarcate the 1 nm seasonal closure (photo credit: MSC)

Figure 12. A monitoring mission

NASCOM demonstrated growing capacity during the later years of the project. In 2012 NASCOM hosted the annual Co-Management Review and Bi-Lateral Co-Management meetings, but USAID/BaNafaa staff invested heavily in meeting preparation and managed expenditures directly. In 2013, budgeting, organization and financial management was handed over to NASCOM. In 2013 and 2014 NASCOM also took over direct management of budgeting, planning, implementation and financial accounting for action research efforts.

NASCOM's progress as an organization has been significant in just a few years. But, it is still a relatively new organization undertaking a complex challenge - leading a transformation in governance of fisheries management in The Gambia. NASCOM still needs support to:

- Develop and broaden capacity and involvement at the leadership and management levels to reduce over-dependency on a limited number of individuals
- Build stronger administrative and financial management capacity
- Review, adapt and implement its Business Plan to effectively serve its constituency and ensure its own financial sustainability.
- Finance annual meetings in the immediate term (Co-Management Plan review and Bi-lateral Co-Management)
- Address the challenges of implementing the co-management plan
- Respond to demand to expand geographic coverage of the plan within The Gambia
- Conduct relevant research
- Pursue MSC certification of the sole fishery
- Develop a framework for bilateral (transboundary) management of the shared stock (see IR2 below)

For example, with regard to the challenges of implementing the Co-Management Plan, after the end of the 2013 closed season (May to October), NASCOM reviewed the effort with stakeholders at the annual sole plan review meeting in November. The following observations were highlighted:

- Seven violations were identified at 5 different landing sites (Kartong, Sanyang, Tanji, Brufut and Bakau).
- Illegal night fishing and the need for nighttime monitoring and enforcement is still a challenge.
- More artisanal fishers were operating beyond 1 nm during the closed season. This caused:
    - Increased investment in materials and time to fish the bottom set gillnets used for sole further out and at greater depths.
    - Increased vulnerability to interference by trawlers with artisanal gear.
- The 42 locally made spar buoys as designed and deployed were low cost compared to other buoy options. Materials cost was $1,797 and deployment cost was $344. However, the buoys proved not to be resistant to the heavy wave conditions. Dragging, displacement and loss of buoys due to wave action and entanglement by night drift net fishers resulted in all but 5 buoys still in position after one season.
- A need for monitoring equipment (GPS, Compass, Binoculars, Cameras, etc.).
- A need for continued outreach and distribution of the Sole Plan, Fisheries Act, 2007 & Regulations 2008 to Sea Rescue Services, Army, LACOMs, MPs, Alkalos & Councilors.

In spite of these challenges, by the end of the project in 2014, NASCOM was receiving requests from fishing communities in areas not covered by the co-management plan (the North bank of The Gambia River and inland along the river) for expansion of the plan to their areas. The plan, with its' 1 nm closed season was perceived to have had a direct and positive effect on the health of the ecosystem and the size of other species of economic and food security value such as lobster. This outcome supports the theory of change applied by the project under IR 1, that ecosystem-based co-management is a valid strategy for increasing social and economic benefit to fishing communities in a way that does not conflict with, but that drives, sustainable fisheries management. This is illustrated by the fact that non-participant fishing communities:

- Knew about the co-management plan
- Saw it implemented by their peer fishing communities
- Perceived a direct positive impact on species of value in the areas covered by the plan compared to their areas (i.e., perceived an economic benefit)
- Recognized NASCOM as the responsible organization managing the plan
- Felt empowered to approach NASCOM to advocate for inclusion in the plan (i.e., perceived the social benefit of the existence of an organization with the power to represent them and make their voice heard in decision-making).

5. Progress towards Marine Stewardship Council (MSC) certification.

MSC certification of The Gambia's sole fishery was not an objective of the USAID/BaNafaa Project. However, in 2008 a year before the project started, a Marine Stewardship Council (MSC) pre-assessment for Gambian sole was conducted at the request of GAMFIDA. The fishery was assessed against the Principles and Criteria of MSC using the Risk Based Framework (RBF). The outcome of this assessment was that the fishery scored above 60 for all of the performance indicators and scored above 80 for principles 2 (Ecosystem) and 3 (Management). However, a score below 80 was received for Principle 1 (Target population) and the final score was not passing.

In 2010 in an effort to assist the Gambia in improving their score, a follow up visit by MSC resulted in a document laying out 9 critical areas for improvement specifically targeting Principle 1. The action plan created was designed to ensure that the Gambia sole fishery would, on completion of the indicated activities, meet the requirements for MSC certification. These 9 activities became principal focus areas for the USAID/BaNafaa Project. A joint memorandum of understanding (MOU) was signed in December 2010 with specific action items to be done between the Gambian Department of Fisheries, USAID/BaNafaa, the Atlantic Seafood Company and GAMFIDA. Over the life of the USAID/BaNafaa Project, significant progress has been made on these action items as follows:

- Competent engaged co-management committee with user rights for sole and catfish
- Increased capacity for data management, data collection and stock assessment by DOFISH. Engagement by other stakeholders (NASCOM and Atlantic Seafood) to provide supplementary data.
- Written management plan with research priorities and meaningful harvest rules and enforcement.
- More accurate biological data available for sole and catfish.

- More complete information about the fishery: gear, supply chain, and value chain.
- Significant progress on developing a process for bilateral decision making and species management.

In addition to the USAID/BaNafaa Project, the private sector also provided support. German retailer Kaufland donated 100,000 Euro to NASCOM. The funds were raised through a consumer outreach campaign to support development of a MSC certifiable sole fishery in The Gambia. Some of the funds are reserved for an MSC full assessment when there is confidence that the fishery will meet the standard. Funds were also for:

- Purchase of 3 boats and engines for monitoring, enforcement of the closed area as well as search and rescue at sea;
- Purchase of sanitation equipment and materials (dustbins, rakes, spades, wheel barrows, shovels etc.,) for environmental sanitation;
- Purchase of ice boxes to maintain quality of fish and improved fish and fishery product handling at sea and landing sites etc.

Figure 13. German retailer Kaufland handing over € 100,000 donation to NASCOM Secretary Dawda Saine at the MSC booth at European Seafood Exposition in April 2013 in Brussels.

In late 2013, stakeholders considered the status of the effort to meet MSC certification standards and noted that improvements are still needed in data collection for regular stock assessment and in understanding and addressing the transboundary nature of the sole stock, its harvesting and its marketing (See bi-lateral Senegal-Gambia activities under IR 2 below). Stakeholders decided to pursue another MSC pre-assessment rather than risk the high stakes (in cost and reputation) of a full assessment. Given the amount of time that has passed and the changes that have occurred in The Gambia and in MSC's process, another pre-assessment will provide a concrete picture of where to best focus future efforts.

In December 2013, CRC submitted a proposal to the Resources Legacy Fund/Sustainable Fisheries Fund (SFF) to seek funding for the pre-assessment. As of the writing of this report (July 2014) SFF has awarded the grant to CRC to engage an accredited firm to conduct the pre-assessment. The work should be conducted within the following 12 month period.
MSC continues to share the Gambia experience broadly as an example of a developing country fishery pursuing certification. The Gambia is an MSC pilot country for fisheries in transition

which helps developing countries move towards sustainability. An MSC video featuring The Gambia, among other developing country case studies was posted on the MSC website in 2013. In 2014, the Chief Executive of MSC wrote a Huffington Post blog article entitled, "Fish for Good in the Developing World," citing The Gambia case and acknowledging USAID.

6. Stakeholders engaged in transboundary fisheries management. (See IR 2 below)

2.1.2 Effective Oyster and Cockle Co-Management Plan

The USAID/BaNafaa project was also successful in supporting Gambian stakeholders to develop and apply a participatory, ecosystem-based, rights-based co-management approach to a second fishery over the five year project timeframe – the oyster and cockle fishery. As summarized at the beginning of Section 2 above, management of the oyster and cockle fishery has also undergone transformative change as a result. Key achievements and the important elements of project support for the oyster and cockle fishery co-management planning process were as follows:

1. An approved and gazetted Oyster and Cockle Fishery Co-Management Plan.

Approval, signature and, finally, gazetting of the oyster and cockle co-management plan were important milestones in the process that officially delegated use rights and management responsibilities for the oyster and cockle fishery in the Tanbi Wetlands National Park (TWNP) to the TRY Oyster Women's Association (see Figure 14 below). The Plan was gazetted with the sole plan on December 19, 2013, almost 3 years after approval. As noted above, approval of this plan had added significance. It is the first case in Sub-Saharan African in which a women's association is granted exclusive use rights to a fishery by a national government.

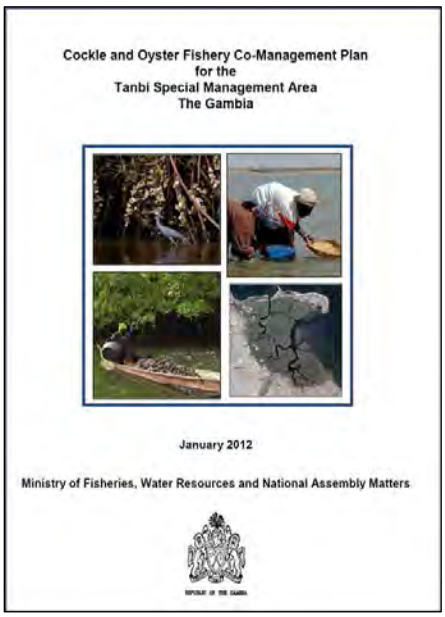


Figure 14. The approved Oyster and Cockle Co-Management Plan (2012)

2. A participatory, eco-system-based process capitalizing on local and scientific knowledge

The TRY Association was established in 2007 by Fatou Janha and the women of the Kamalo oyster harvesting community. Over decades, almost no improvements had occurred in the poor working conditions and low returns experienced by women oyster and cockle harvesters in The Gambia, even while oysters are considered a delicacy. In fact the work had become more difficult and less remunerative over time as more harvesters sought after fewer and smaller shellfish. TRY aimed to change that. When the USAID/BaNafaa project began working with TRY in 2009, the cockle and oyster fishery was not recognized and did not feature in the national fisheries development program. TRY membership was and is primarily middle aged women, mostly widowed and uneducated and yet the bread winners of their families. The women suffered disproportionately from indebtedness and economic hardships during the closed harvesting season and a difficult and hazardous working environment during the harvesting season. Oysters and cockles are harvested, processed (shelled) and marketed locally by the women themselves with no intermediaries.

With USAID/BaNafaa assistance meetings, trainings, exchange visits and action research activities were conducted with stakeholders at all levels, including TRY members, harvesting site and central office DoFish staff and decision-makers at the various Ministries and Departments with jurisdiction over the Tanbi Wetlands National Park (the National Environment Agency (NEA), The Department of Parks and Wildlife Management (DPWM), the Department of Forestry and the Department of Fisheries in the Ministry of Fisheries and Water Resources). The Table of trainings conducted over the Life of the Project (LOP) in Section 5.4 below provides an overview of the training provided. It ranged from harvesting site trainings on oyster biology with TRY members in The Gambia, to exchange visits in Senegal and Tanzania, to fisheries leadership training for institutional partner representatives at URI/CRC.

Figure 15. Study Tour of Gambian Oyster Harvesters to the Sine-Saloum Region of Senegal (2009). Boat trip from Foundiougne to Mounde Island

Action research conducted with stakeholders included the following:

- A Participatory Rural Appraisal of oyster harvesting activities in The Gambia.
- Pilot Ba Nafaa Oyster Culture Project (2010)
- Value Chain of the Artisanal Oyster Harvesting Fishery of The Gambia (2011)
- Status of Bivalve Aquaculture and Water Quality Activities (2011)
- Results of a Preliminary Shoreline Shellfish Sanitary Survey near Banjul, Gambia (June 2011)
- Report on Sanitary Shoreline Survey within the Tanbi Wetlands National Park and Other Shellfish Harvesting Communities, The Gambia (June 2012)
- Hotel and Restaurant Market Survey (2012)
- Local Market Sales Point Customer Survey (2012)
- Development of Sustainability Criteria for the Oyster Fishery in The Gambia (2014) forthcoming

As was the case for the sole fishery, the combination of training and action research engaging stakeholders at all levels created the enabling conditions for participatory, ecosystem-based decision-making for sustainable management of the oyster and cockle fishery. It enabled stakeholders to agree on common objectives and approaches, while it also validated the contributions of both local and scientific knowledge to the process, resulting in broad-based ownership of management and governance decisions for the fishery.

Creating solidarity among the women of different oyster harvesting communities who had never worked together turned out to be one of the most significant outcomes of the process supported by the USAID/BaNafaa project. Traveling, eating, sleeping, meeting and training together on a regular basis during the early years of the project broke barriers and created social bonds among the women of these previously isolated communities. The women's confidence in themselves and the value of their work, and their trust in the co-management process, grew substantially over time. The project succeeded in facilitating a transformation of the women's own attitudes about their role in sustainable fisheries management, including the expectation that their voices count in decision-making.

3. Adaptive Management

The Oyster and Cockle Co-Management Plan is based on the concept of on-going research and regular review and adjustment of the plan to respond to new information and changing conditions. Following approval of the plan in January 2012, TRY hosted two consecutive annual co-management plan stakeholder review meetings in January 2013 and January 2014. Among other topics, the meetings:

- Reviewed the roles and responsibilities of institutional stakeholders
- Reviewed the findings of water quality testing and aquaculture activities
- Discussed the results of marketing and value added research and pilot activities
- Considered the successes and challenges of the management measures in place

Figure 16. TRY members voting not to increase the open harvest season, "…we have reached grade 12, we will not go back to grade 1."

In early July 2013 as the 8 month closed season began, the appropriation by TRY members of the adaptive management approach was demonstrated. At the TRY annual general meeting convened to review the year's activities and make recommendations for the future, 200 women from all TRY communities voted on a proposal by some members to consider shifting the beginning of the open season from March back to January and prolong it by an additional month (i.e., January to May rather than March – June). The issues considered by the women when discussing this option made clear how far they have come in their knowledge, experience and engagement in managing the fishery. They considered economic, social and biological factors in making the decision. In the end, they unanimously agreed (by vote) to maintain the March to June opening (see Figure 16).

4. The co-management institution (TRY Association) operational and continuing to develop capacity.

Over the life of the USAID/BaNafaa Project, with support through seed grants and technical assistance, TRY strengthened its institutional capacity as follows:

- Expanded from one community of 40 members to 15 communities of 500 members
- Established a TRY Centre as Headquarters.
- Developed a Business Plan
- Drafted a Standard Operating Procedures manual
- Contracted an external audit
- Benefitted from financial and administrative management training
- Benefitted from Peace Corps Volunteers posted with TRY

- Delivered integrated programs to support sustainable fisheries livelihoods by responding holistically to the needs of members (see below sections)
- Held Annual Oyster Festivals in 2011 and 2012, with more than 250 guests and media coverage.
- Implemented and monitored management measures specified in the approved co-management plan
- Hosted annual Co-Management Plan stakeholder review meetings in 2012 and 2013
- Conducted research to inform fisheries management decision-making
- Formed Oyster and Cockle management committees in each community involving the broader community, Alkalos and other village leaders and non-TRY members
- Advocated to the Ministry of Fisheries, DPWM, and NEA for support on issues of importance to its constituents
- Requested the government and the municipality to allocate a plot of land for TRY to build its own outreach and processing center
- Leveraged support from other donors (The Ministry of Education, GEF, UNDP, the British High Commission and Taiwan among others)
- Was awarded the UNDP Equator Prize in 2012, including $5,000 and participation in Rio+20

In spite of its remarkable progress, TRY is still a young and developing organization of members who are among the most vulnerable in The Gambia. TRY would benefit from continued support for capacity development in the following areas:

- Legacy planning to develop and broaden capacity and involvement at the leadership and management levels to reduce over-dependency on a dynamic founder/director.
- Building stronger administrative and financial management capacity
- Reviewing, adapting and implementing its Business Plan to effectively serve its constituency and ensure its own financial sustainability.
- Building its own processing center
- Financing annual Co-Management Plan stakeholder review meetings in the immediate term
- Addressing the challenges of implementing the co-management plan
- Responding to demand to expand geographic coverage of TRY and the plan within The Gambia
- Conducting relevant research
- Pursuing a joint management plan for the transboundary Allahein River Estuary

For example, with regard to conducting relevant research, DoFish does not collect stock assessment data on oysters and cockles. TRY has begun to fill that gap by collecting its own data on the change in size of oysters at a sample of sales points throughout the open season. This information can be used to assess the biological objective of the Co-management plan (i.e., provide information about the status of the stock as the open season progresses and from year to year). TRY engaged TRY member's daughters from the skills training program run by TRY, rather than external consultants, to collect the data. Mr. Kanyi Babanding of USAID/BaNafaa trained them and assisted in the process. Results (report pending) show that the decline in oyster size over the 4 month open season is not significant at most site. Thus, overfishing is not

indicated. The data is not sufficient to determine the status of the stock and will be most useful over time (when collected annually and compared). However, it is data that is within TRY's capacity to collect systematically from year to year and data that will be owned, understood and easily accessed by TRY members for management decision-making.

Figure 17. Skills Training Program participants (TRY members' daughters) conduct biological sampling of oysters from sales points during the 4 month open season.

5. Delivery of integrated programs to support sustainable fisheries livelihoods by responding holistically to the needs of women shellfish harvesters.

The USAID/BaNafaa project supported TRY's integrated approach that worked towards sustainable fisheries management while also addressing the multiple, interdependent needs of its members. This approach enabled the women to benefit in other ways, while reducing their fishing effort. Figure 18 illustrates the three pronged approach – improving fisheries livelihoods sustainably while meeting basic needs and developing alternative livelihoods.

a. Safer working conditions.

One of the first and most immediate improvements TRY members experienced as a result of joining the organization was safer working conditions. TRY provided members with access to subsidized price boots for protection against cuts and infection during harvesting and processing. Life jackets were provided as donations received by TRY. Later, the Global Giving account that URI helped TRY to set up was used to purchase goggles to protect the women's eyes against smoke irritation and the danger of exploding shells during the smoking process. Shellfish handling and hygiene training, shoreline sanitation surveys, and eventually WASH interventions at some sites, also reduced the women's exposure to disease in their work environment.

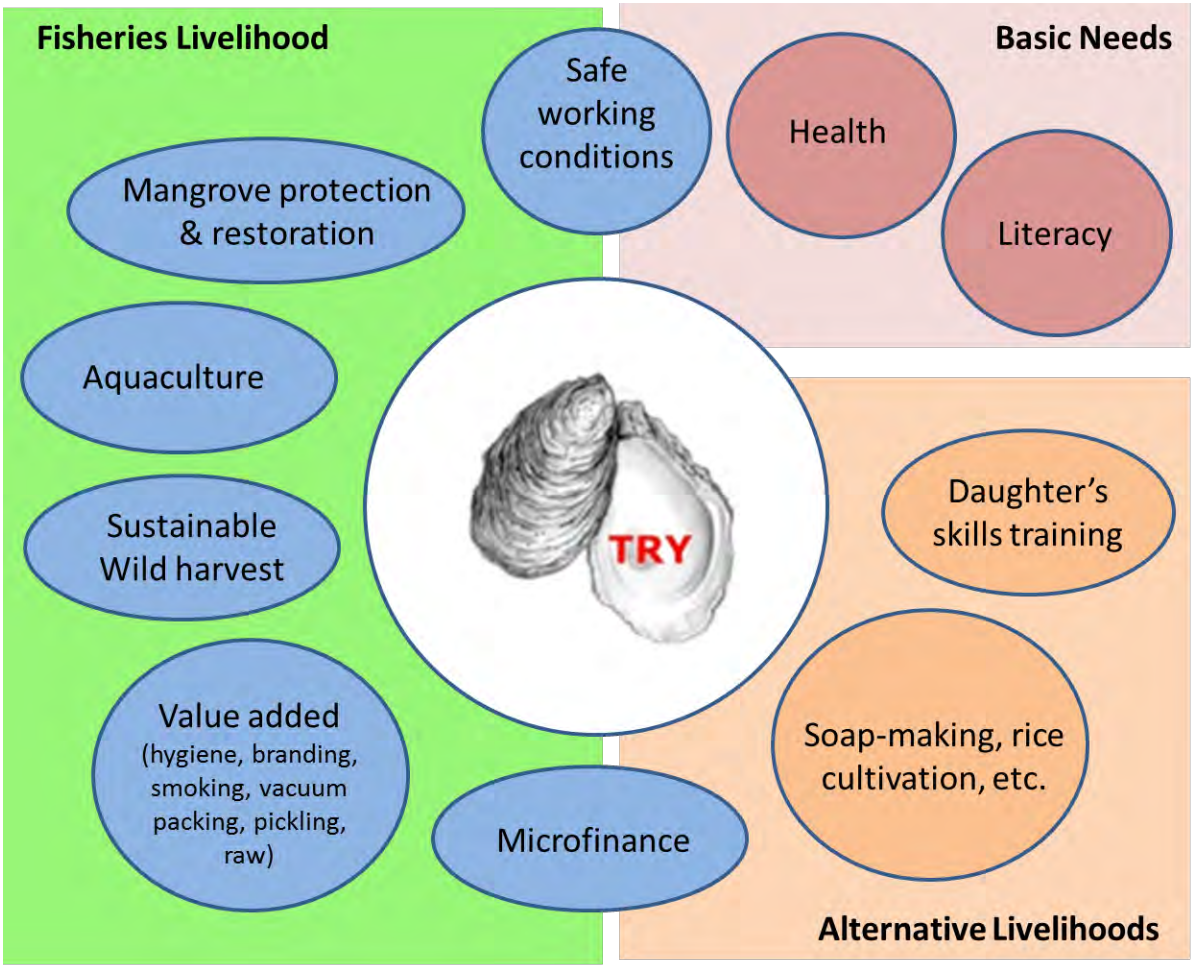


Figure 18. TRY's integrated approach to sustainable fisheries livelihoods

b. Value added

Longer closure – larger oysters: The principal value added to the oyster product developed with project support is the longer closed season (8 months) specified in the co-management plan's management measures. A longer closure results in larger oysters that fetch a higher market price per kilogram than smaller oysters. TRY members have experienced an increased market price since 2012 that is more than double 2010 prices. They attribute the increase principally to the increased size. In addition to larger size at the start of the season, oyster size (and thus price) appears not to be declining significantly over the course of the open season as was the case previously.

Improved hygiene and handling – TRY members were trained in the basics of improved handling and hygiene, including covering oysters during processing and marketing, wearing gloves, headcoverings and TRY branded jackets, sheltering from the sun, elevating basins and baskets off the ground for marketing and selling by weight rather than volume (the kilogram rather than

the cup). With these measures, TRY members are distinguishing themselves from other oyster sellers and building customer confidence in the better safety and quality of their product.

Figure 19. TRY members practicing improved handling and hygiene practices at their sales point.

Smoking, pickling, vacuum packing – In 2013, fuel saving oyster smoking ovens were built at 15 TRY community landing sites based on improvements to the design demonstrated at Kamalo built with USAID/BaNafaa assistance in FY12. One of the main improvements was to locate the ovens inside a covered open air shelter (see Figure 120below). The metal drawers on the original design were also too heavy for the women to handle alone. The new design will continue to be modified for security. Theft of the metal parts is a challenge at some sites as scrap metal is at a premium in The Gambia. Not only does smoking with these ovens require less fuelwood than used to boil the oysters on a traditional 3 rock fire, but the price per kilogram of smoked oysters is higher than boiled and should bring more value to the women for the limited kilograms they are sustainably harvesting. The project also supported TRY to experiment with pickling and vacuum packing oysters (see Figure 21 below). These processing techniques can potentially bring higher net returns and allow the women to extend their income from oysters over a longer period than the 4 month open season. TRY also experimented with freezing, but the unpredictable and costly electricity supply means that this option is not reliable.

Figure 20. (left) Pilot oyster smoking oven technology transferred from Senegal, constructed at Kamalo oyster site. (right) Improved design oyster smoking infrastructure scaled up to 15 harvesting sites with UNDP funding.

Figure 21. (left) Oysters in brine and (right) vacuum packed oysters

Raw – This is highest value per kilogram oyster product TRY could produce. Water quality results at sites inside the Tanbi indicate that conditions are favorable for harvesting a safe raw product *if* handling, hygiene and high end tourist hotel markets can be mastered. TRY could consider the option of developing a select group of well trained and high performing harvesters to pursue this option over the medium to long term. It would also require the coordinated efforts of multiple Gambian Government agencies to establish and implement the shellfish sanitation plan that is currently under development (see section 6 on the Gambia National Shellfish Sanitation Plan below).

c. Aquaculture Action Research.

Environmentally friendly aquaculture research and development is a management measure specified in the Oyster and Cockle Co-Management Plan. From the beginning of the project USAID/BaNafaa supported aquaculture training and participatory action research pilots on floating basket culture of oysters, cockle ranching and rack culture of oysters conducted by TRY members in their communities. The Department of Fisheries and Peace Corps volunteers also contributed to these efforts. See Figures 22-24 and Table 3 below for a Summary of Results and observations. Brian Crawford's presentation entitled, "Action Research in The Gambia: Can Shellfish Aquaculture And Sea Ranching Enhance Food Security, Incomes And Empower Women Harvesters In The Gambia," delivered at a USAID Aquafish Collaborative Research Support Project event in February 2013, summarizes the lessons learned from The Gambia experience as follows:

"Oyster aquaculture has the potential to increase women's income and harvest yields, and reduce wild harvest pressure…Improving incomes, food security and empowering this disadvantaged group of women requires an integrated approach where no one activity will be sufficient to achieve this goal. Improving production through aquaculture and improved wild harvest management must be coupled with other interventions aimed at a broad range of factors that keep these women in poverty. These include - improved literacy, access to credit, a stronger

producer association, improved products, markets, and landing site sanitary facilities, exclusive harvest rights, as well as cooperative and capable local government and non-government institutions that can provide support services."

Figure 22. The modified Taylor float oyster culture basket deployed in the estuary system near oyster harvest sites at Kubuneh

Figure 23 and 24. (left) TRY Members in Kartong sample cockles in their test plot at low tide; (right) GEF funded oyster rack culture based on lessons learned from early USAID/BaNafaa pilots.

Table 3. Summary of Shellfish Aquaculture Participatory Action Research

Type of Culture	Results	Observations	Resources
Floating Basket oyster culture	Not economically viable at this time. At the stocking density of 150 seed oysters per float basket, break even on materials costs would take about 17 years. Most of the economic imbalance rests with the low market prices in local markets.	High level of interest to continue experimenting. Women report it is safer and easier than traditional harvesting; they can work closer to home; it has less impact on the mangrove forests; it produces marketable, higher value oyster shapes and sizes. They want to develop more economic ways to make the baskets/floats and continue to improve handling, processing and marketing aspects of the value chain for higher returns.	Technical Paper by Dr. Michael Rice of URI , "Modified Taylor Float System for Culturing Oysters in The Gambia,"
Cockle Ranching. Transplanting juveniles from high to low density areas	Initial positive results. Strong motivation from the women to continue. Experimental plots lower in the intertidal zone added in Year 3. Data from new plots indicated positive trends. Transplanted areas showed significantly greater biomass than traditionally harvested areas.	In September 2012, cockle populations experienced a dramatic die off, probably related to the higher than normal rainfall that year and the resulting runoff affecting salinity, temperature, turbidity or other factors. Controlled experiments to learn more about potential causes were not successful due to power outages. Due to low input costs, pilots in the field could be continued.	
Oyster Rack Culture.	The wild harvest is currently so plentiful it is not evident that rack culture could produce comparable volume with comparable effort and cost/benefit in the immediate term. Analysis of the production and marketing results of this activity and its potential for sustainability without subsidy have not been documented to date.	BaNafaa pilots ended in Year 2. Other donor support enables TRY to continue to develop the technique and scale up. • GEF-UNDP Small Grant • Taiwan: $88,000 to the Department of Fisheries and TRY over 3 years for 6 communities. • British High Commission $6,800 to TRY. Potential benefits: reduce pressure on the mangroves, extend the harvest of larger, higher value oysters later in the season, significantly reduce travel time to and from ever more distant harvesting sites as the season goes on.	Aquaculture in The Gambia, in World Aquaculture, by Dr. Michael Rice of URI, Ousman Drammeh and Kanyi Babanding of USAID/BaNafaa, Famarah Darboe of DoFish

d. Mangrove Protection and Planting

Mangrove protection and reforestation directly benefits TRY members by reducing and reversing degradation of the mangrove ecosystem which is important to bivalves and other species. It is a management measure specified in the oyster and cockle co-management plan. TRY members have a vested interest in ensuring that mangroves, especially in the Tanbi Wetlands National Park, are not cut illegally for fuelwood, construction or to clear land for other uses. Cutting of mangrove prop roots to harvest oysters (see Figure 25 below) is no longer accepted. As specified in the Co-Management Plan, only a specific type of tool (the axe) is allowed for removing oysters from the roots without causing damage. As a result of the Co-Management planning process the women now have an engaged and supportive network of stakeholders, including government agencies. TRY members now feel more empowered to officially alert local and national authorities when they observe violations. TRY members also now serve as a powerful driving force for education of the next generation and their communities about the value of protecting the mangrove ecosystem.

Figure 25. (left) A man who harvested oysters by cutting the mangrove root was "educated" by TRY members that his technique is damaging the ecosystem. (right) Mangrove wood stacked for use as fuelwood.

In 2011/12 TRY planted 33.5 hectares of mangroves. USAID/BaNafaa supported the reforestation of 2.5 of these hectares in Kartong with the species *Rhizophora racemosa*. Participation of TRY members and their families as well as others from the community was enthusiastic. More than 48 people planted more than 8,481 propogules. A USAID/BaNafaa branded signboard marks the replanted area (see Figure 26 below). In addition to the USAID/BaNafaa funded site in Kartong, more than 100 TRY members and partners planted additional hectares at Old Jeshwang and Fajikunda funded by TRY's GEF grant. Segments on the mangrove planting were shown on the evening news in the days following the events. As Figure 26 (middle) shows, the planted propogules are surviving and growing 2 years later. However, TRY wants to formally evaluate the success of this effort before continuing to plant further hectares. They have not yet found the resources to do so.

Figure 26. Mangroves planted from propogules by TRY (right) in October 2011, surviving and growing, 2 years later (middle).

e. Microfinance.

In 2010 TRY initiated a microfinance loan program focused on teaching TRY members financial literacy and the value of saving. Most of the women had never before saved. The National Association of Cooperative Credit Unions of The Gambia (NACCUG) provided training and guidance. Between 2010 and 2012, 377 women benefitted from loans ranging from approximately $30 - $180 each. Higher loan amounts were tied to higher savings rates. After 3 rounds of loans, TRY decided to graduate active microfinance members to formal, professional microfinance institutions like NACCUG. The principal value of the microfinance activity was the experience in financial management and savings it provided to the women who participated.

Figures 27 and 28. (left) A TRY microfinance participant is surprized at the amount of savings she accumulated. (right) A TRY member learning basic literacy and numeracy

f. Literacy.

The majority of TRY members are not literate. In FY12 based on demand from members, TRY established literacy classes. Thirty members participated and made good progress. However, due to busy work schedules during the harvest season, the classes dropped off and were not resumed on a regular basis. The women still have the ambition to continue based on the gains they made.

g. Skills Training of TRY Daughters.

Early in the organization of TRY, the women shared that one of their key concerns was their desire to ensure a future for their daughters with more options than only oyster and cockle harvesting. Many of the member's daughters were of school age or older, but were not or had not attended school. TRY established a Skills Development Program for members' daughters in 2011. It included practical coursework and hands on training in handicrafts, textile dying, soap-making, food preparation and catering, reproductive health, HIV/AIDS and life skills among other topics. In April 2013, fifteen students graduated from the 2 year program. Action Aid The Gambia was the major sponsor of this graduating class. USAID/BaNafaa also contributed through its support for the Peace Corps Volunteer posted at TRY who participated in this activity. Alternative livelihood development is a management measure specified in the co-management plan to reduce pressure on shellfish and mangrove resources.

Figure 29. Skills training graduates completing their 2 year program at TRY.

h. Health.

In FY13, TRY began a health education initiative to educate TRY members on health topics relevant to their lives and chosen by the women themselves, including sexual and reproductive health, malaria, cancer, nutrition, oral and eye health. This initiative came in response to requests from the TRY women. The activity was funded by the Peace Corps SPA (Small Project Assistance) Program. Costs were minimal ($45-$60 per class), so the program will be continued by TRY. Classes were held on the topics of female and male reproductive anatomy, menstruation, menopause, breast health, STIs, HIV, cervical cancer and family planning. Of the

50 women who participated in the cervical cancer session, 80% later showed up for scheduled appointments at a local clinic. It is rare for Gambians, especially uneducated women, to have the chance to speak freely with willing health professionals as TRY members were able to do as a result of this activity. The classes made the women more confident in understanding and accessing health services, especially sexual and reproductive health services, available in the Greater Banjul area. In July 2013, the TRY Executive Director was invited by The Woodrow Wilson Center in Washington DC to speak about TRY's integration of health activities into natural resource management programs. She spoke in on a panel entitled "Oysters, Octopus and Resilience." In November 2013 she was awarded a scholarship to present TRY's experience at the 2013 International Population, Health and Environment (PHE) Conference (also supported by USAID) in Ethiopia.

6. Development of a Gambia National Shellfish Sanitation Plan.

USAID/BaNafaa supported water quality testing for 3 consecutive years at 15 oyster harvesting sites within Tanbi Wetlands and Western Region, and at 4 additional harvesting sites deep inside the Tanbi starting in January 2013. Results are shown in Figures 30 and 31 below. The data shows encouraging results. The results from inside the Tanbi are among the lowest counts found in any tropical oyster growing grounds. The overall results suggest that a shellfish sanitation program could allow for the safe harvest of live oysters for a raw oyster market to tourist hotels or, potentially, an eventual export market if handling and processing hygiene can be significantly improved.

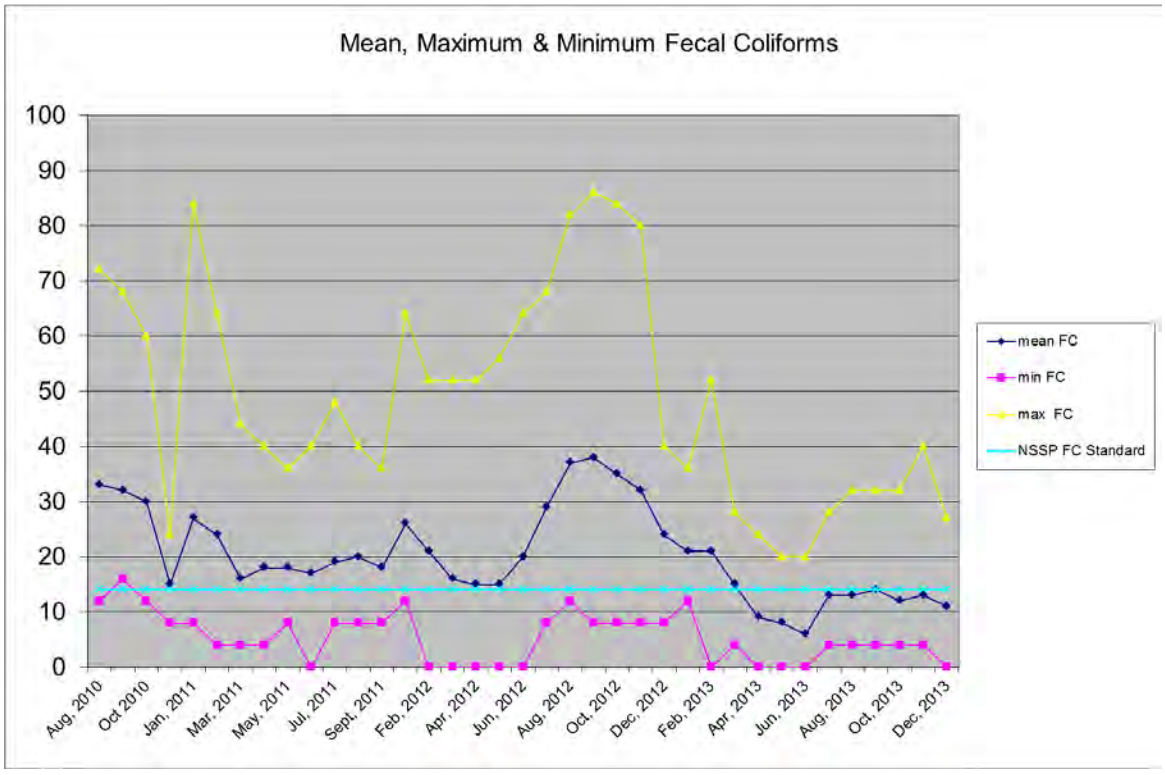


Figure 30. Average Fecal Coliforms, 15 Tanbi & Western Region sites 2010 – 2013.

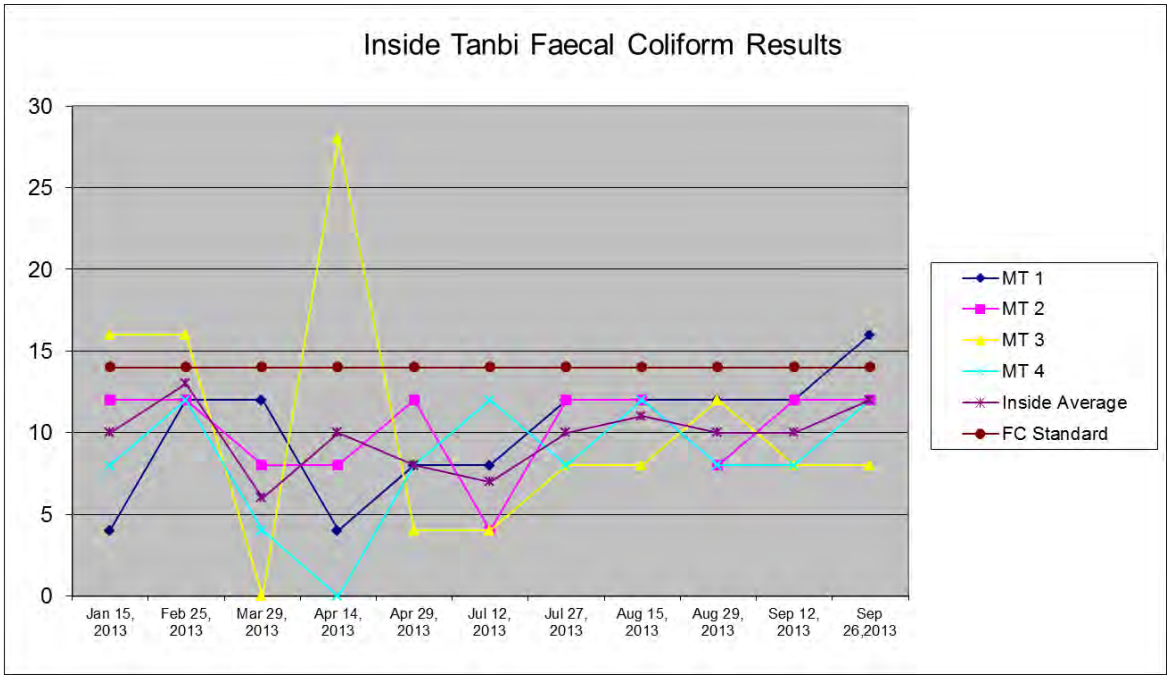


Figure 31. Average Fecal Coliforms at inside Tanbi sites Jan. – Sept. 2013

Since January 2012, the Department of Water Resources in partnership with other Gambian government agencies and TRY conducted sanitary shoreline surveys in these oyster harvesting estuaries with technical training and guidance from the USAID/BaNafaa Project to identify potential sources of contamination. Figures 32 and 33 below illustrate some of the problems identified. Pig enclosures and direct discharge from latrines have been removed as a result. In addition, the USAID/BaNafaa project's WASH component detailed in the following section of this report improved sanitation and hygiene at 3 oyster harvesting sites (Kamalo, Old Jeshwang and Kartong). Municipal waste was cleared at some sites and commitments made by public authorities to support communities to monitor and enforce random waste dumping. However, waste continues to be a significant challenge, especially at the peri-urban sites.

Figure 32. Pig pens at Old Jeshwang oyster site that have now been removed.


Figure 33. (from left) A latrine that emptied directly into the estuary and garbage disposal at oyster harvesting sites.

In January 2014, Dr. Michael Rice of URI trained and worked with a group of resource persons from 8 Gambian agencies to analyze the three years of water quality data & sanitary shoreline survey observations. As a result, provisional water quality zones and classifications were assigned for three estuaries (Tanbi, Kubuneh and Allahein). The water quality classification zones were mapped using the Geographic Information System services of the Gambia National Environment Agency (NEA). The results are shown in Figure 34 below.

These results and the provisional classification zones were shared with TRY Association members and stakeholders at the Second Annual Oyster and Cockle Co-Management Plan Review meeting in January 2014. The provisionally prohibited zones (in red) were of particular concern and drew attention to the need to focus efforts on addressing the causes of poor water quality in these areas. Stakeholders also noted that the timing of the 8 month closed season for oyster harvesting already in place as a management measure under the Co-Management Plan for the Tanbi coincides with the recommended seasonal closure based on water quality data (yellow areas on the map).

The classification and mapping of water quality zones forms the basis for a Gambian National Shellfish Sanitation Plan (GNSSP) that is in draft and still under development. Commitment from Gambian agencies to continue developing the GNSSP after the end of the USAID/BaNafaa Project has been formalized in a multi-agency Memorandum of Understanding signed in April 2014 and awaiting the final signature of TRY. Participating agencies are the Department of Fisheries, Department of Water Resources, National Environment Agency, Department of Parks And Wildlife Management, Department of Forestry, Department of Health Promotion, the Food Safety and Quality Authority and TRY Oyster Women's Association. The MOU engages these agencies to continue investment of human and financial resources for this effort. Recommendations of USAID/BaNafaa and Gambian stakeholders on the way forward for development and implementation of the GNSSP include the following:

- Continued water quality monitoring at shellfish harvesting sites
- Continued sanitary shoreline surveys
- Behavior change towards the application of the principles of hygiene and sanitation
- Application of good manufacturing practices (GMPs) and good hygiene practices (GHPs)
- Strengthening and formalization of interagency collaboration.

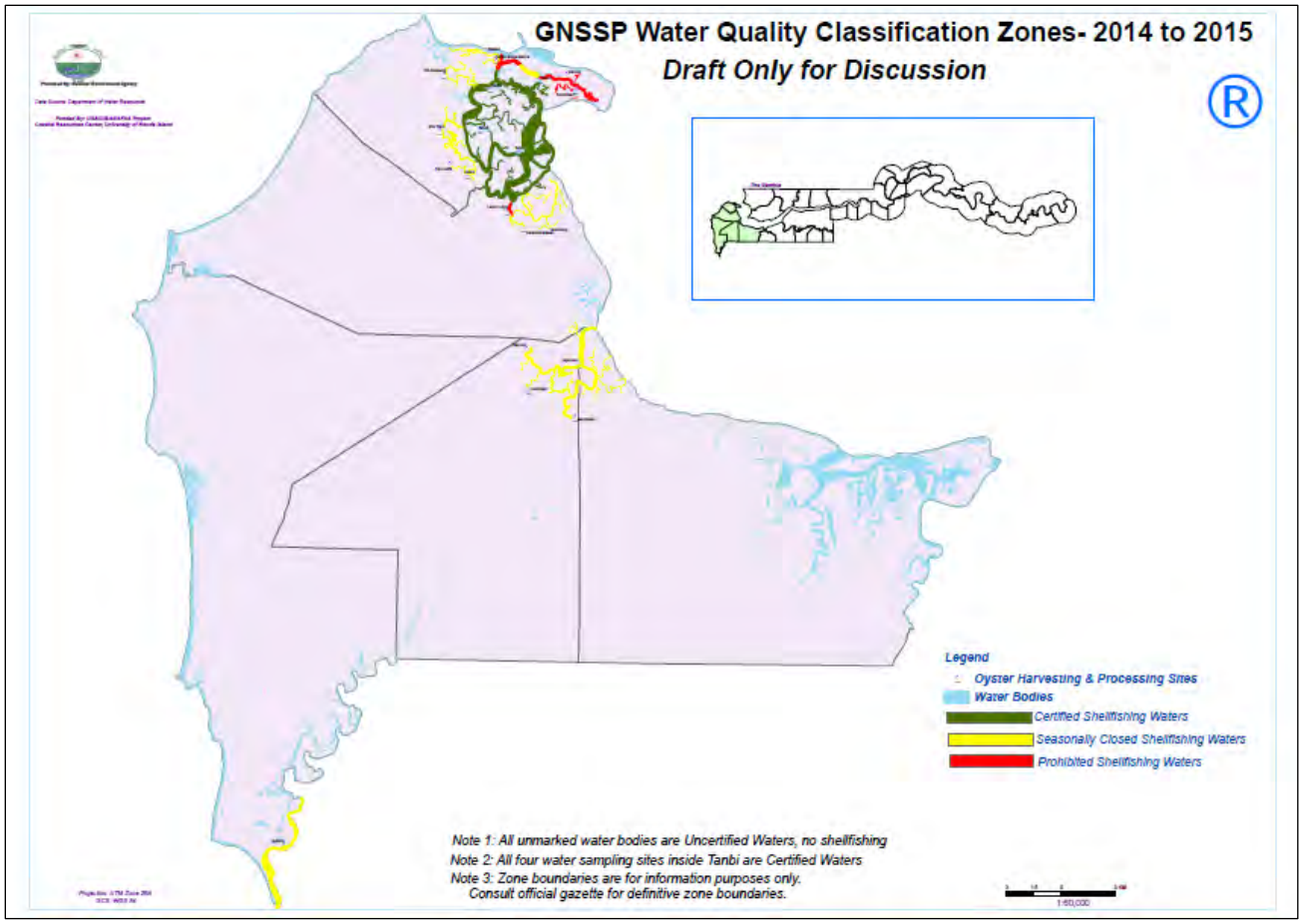


Figure 34. Provisional Water Quality Classification Zones for Shellfish Harvesting

Finalizing and implementing a GNSSP will make The Gambia second to only one other country in Sub-Saharan Africa that has such a plan – South Africa. This effort will serve as a point of reference and an important case study for developing countries striving to sustainably manage their shellfisheries by improving the quality and the value of their product. Dr. Rice shared this process with colleagues in the U.S. in a presentation at NOAA's 34th Milford Aquaculture Seminar in February 2014.

7. Stakeholders engaged in transboundary, ecosystem-based co-management planning for the Oyster and Cockle Fishery in the Allahein River Estuary.

USAID/BaNafaa conducted a PRA in 2012 in the Kartong oyster harvesting community (see Figure 35). The shared use of the transboundary Allahein River estuary at the southern border of The Gambia and Southern Senegal was evident. In March 2013, the next step of a joint management planning process for the estuary was undertaken. A two day meeting brought together community stakeholders from both countries. Communities were interested in working together to prepare and implement a co-management plan. Since the March meeting, outreach and awareness raising on these ideas was carried out in each community and TRY invited women from the Senegal communities to participate in TRY training activities and meetings in Banjul. The Senegalese communities in the Allahein estuary also respected the closed season for oyster harvesting that started on July 1, 2013 once they were aware of it and its purpose.

In January 2014, USAID/BaNafaa supported the TRY Coordinator (Fatou Janha Mboob), the TRY Secretary (Isatou Jarjue) and two Department of Fisheries staff (Ebrima Jabang and Kanyi Babanding) to conduct a three day transboundary visit to five Southern Senegal oyster and cockle harvesting communities to follow up on the previous meetings. The communities included Niafrang, Kabajo, Abene, Katak, and Donbondir. They all acknowledged that the shared stock of oyster and cockle requires an ecosystem-based, co-management strategy for their benefit and the benefit of future generations. The communities agreed to collaborate with TRY to hold future meetings and reach consensus on management measures, bye laws and conservation of the mangrove ecosystem. The TRY/DoFish delegation also visited the Department of Fisheries in Abene and was assured of their collaboration for the preparation of a Joint Transboundary Co Management Plan. The delegation also had the opportunity to meet the Senegalese Government National Assembly Member for the region. She pledged support and collaboration for the joint co-management effort. Following the trip, six Senegalese and two Gambian communities attended a meeting in Kartong. Discussion centered on the environmental issues at stake and the organizational principles and structure of TRY and its member communities that could be adapted to the context of the Southern Senegal shellfish harvesting communities in the Allahein. The Senegalese participants identified next steps, including the need to sensitize their community members further and to organize their own association(s). Having representative structures in place on the Senegal side will facilitate joint discussion and planning with TRY and other stakeholders.

Based on the extremely positive momentum that USAID/BaNafaa supported outreach has generated to date, URI/CRC submitted a concept note to the US State Department through the U.S. Embassy in Banjul proposing post-USAID/BaNafaa support to TRY for continued development of this transboundary plan. URI will continue to follow up with the Embassy and USAID.

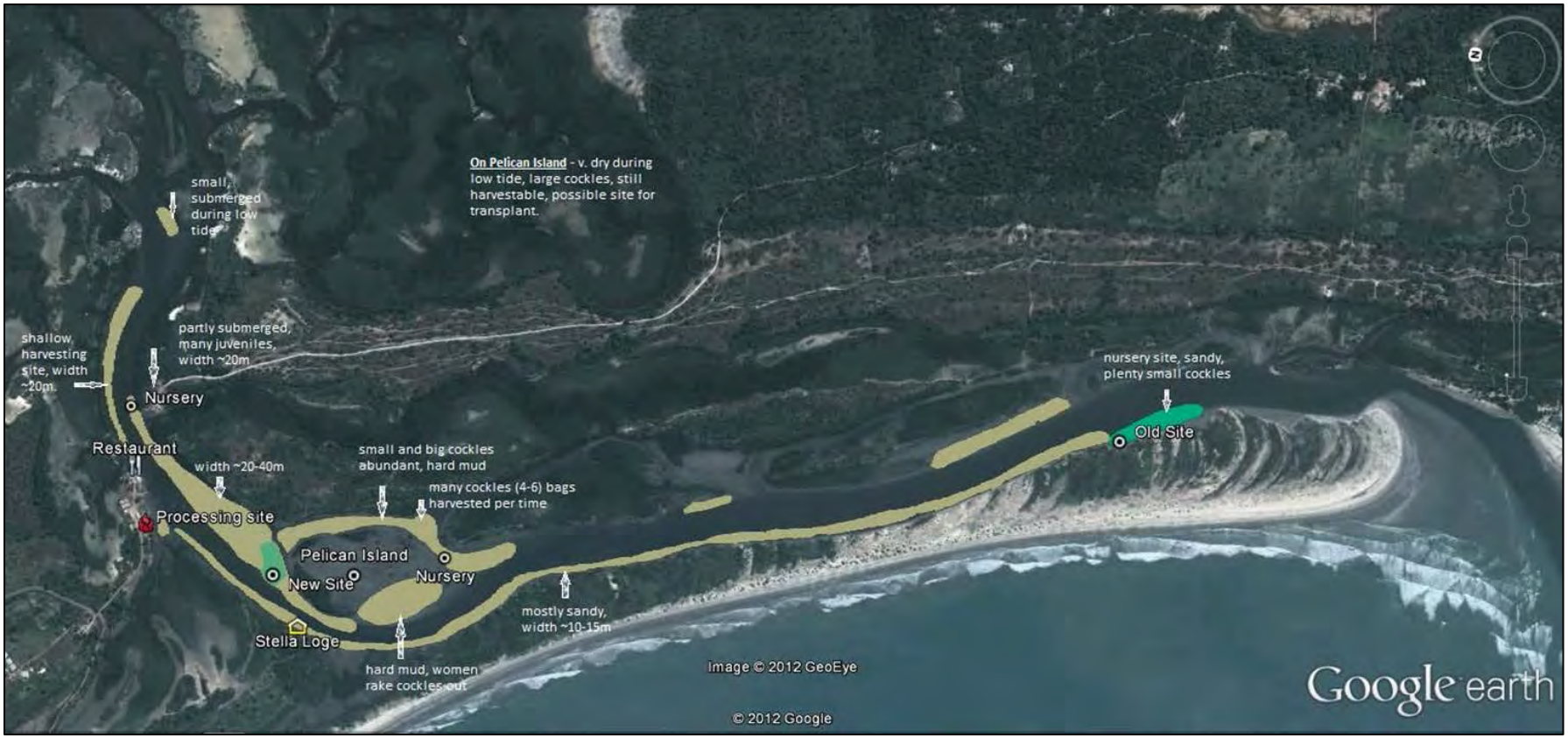


Figure 35. Satellite Map of the Kartong shellfish harvesting area at the mouth of the Allahein River estuary.

2.1.3 Water, Sanitation and Hygiene (WASH)

The USAID/BaNafaa Project was awarded a Water and Sanitation (WASH) add-on at the end of Year 2 (FY11) to support needed water supply and sanitation improvements at approximately seven public sole fishery and oyster/cockle fishery landing/processing sites. The Ministry of Fisheries and specific Community Fisheries Centers had indicated that Water and Sanitation were development priorities for the artisanal fisheries sector and expressed their interest in having the USAID/BaNafaa project provide assistance in this area.

Six fish and oyster landing sites were prioritized for WASH interventions as a result of a WASH Needs Assessment and Stakeholder Workshop conducted at 16 sites in Year 3 (FY12) led by TARUD. The needs assessment was participatory, using PRA techniques. Stakeholder workshop participation was broad and comprised stakeholders from the Ministry of Fisheries and Water Resources, DoFish, the National Environment Agency (NEA), Department of Water Resources, Department of Parks and Wildlife Management, Department of Health, Department of Community Development, USAID/BaNafaa implementing partner for facilities construction - GAMWORKS, USAID/BaNafaa implementing partner for community outreach and training - TARUD, Local Government Authorities from Banjul City Council and Brikama Area Council, representatives from the seven (7) Community Fisheries Centres (CFCs), including at least one woman from each, representatives of TRY Association, NASCOM, the National Water and Electricity Company (NAWEC) and representatives of the Media.

By the end of the project, two and a half years after the component was added, WASH outputs were fully achieved. Communities were trained, WASH Committees were established, WASH Management Plans were signed and toilet blocks and water points were handed over to communities at six priority sites as follows:

Table 4. WASH Facilities Handed Over to Fishing and Oyster Harvesting Communities

	Site	Type of site	Type of Facilities	Handover
1	Brufut	Fisheries	2 toilet blocks, 2 water points	December 2013
2	Kamalo	Oysters	1 toilet block, 1 water point	December 2013
3	Sanyang	Fisheries	1 toilet block	May 2014
4	Old Jeshwang	Fisheries & Oysters	2 toilet blocks, 2 water points	December 2013
5	Kartong	Fisheries & Oysters	2 toilet blocks, 2 water points	March 2014
6	Tanji	Fisheries	1 toilet block	May 2014

As a result, 23,175 people have improved access to sanitation facilities and 11,663 have improved access to water facilities. Eight community WASH committees were established and trained to promote sanitation and hygiene behavior change and to sustainably manage WASH facilities and activities. Direct beneficiaries include fishermen, oyster harvesters, women fish venders, small scale fish processers and other laborers that utilize these facilities daily as well as the general public. The clean water supply and sanitary facilities at these sites will also contribute to improved water quality in the marine and estuarine environments in the immediate

vicinity, as well as the sanitary handling of the seafood supply landed and processed at the sites and destined for local, West Africa regional and export markets. Lessons learned from the 2012 Cholera outbreak along the Sierra Leone/Guinea coast highlighted the critical importance of good sanitation at coastal fisheries landing sites. In addition, recent research on small-scale African fisheries suggests that addressing high priority fisher household vulnerabilities such as water, sanitation and health issues are likely to increase incentives for fishermen to engage in more sustainable fisheries management practices[7]. The USAID/BaNafaa project provided the following support to stakeholders at each of the sites benefitting from WASH:

Environmental Screening and compliance: GAMWORKS conducted site visits to identify environmental concerns related to the siting, construction and operation of WASH facilities in accordance with both Gambian law and USAID requirements. They prepared an environmental report and Environmental Mitigation and Monitoring Plan (EMMP) for the construction phase as well as recommendations for individual site EMMPs for operation of the completed facilities. The findings were used for decision-making on:

- Siting and design of facilities
- Conditions required in construction sub-contracts
- Content of WASH Management Committee trainings
- Content of WASH Management Plans for each site.

Given the sensitive coastal location of the sites and the need to take sea level rise and other climate change impacts into consideration, this was an important aspect of implementation. GAMWORKS also oversaw testing of water quality for all new water points in accordance with Gambian law and USAID requirements. All but 2 of the water points (those in Kartong) are from municipal sources. All water points met required standards.

Participatory Hygiene and Sanitation Transformation (PHAST) Training. TARUD trained 240 participants, including 167 women (40 participants at each of the six sites). The training was designed to create awareness, increase understanding of the problems and their causes, transform attitudes and empower local actors to champion change from within their communities. The training was conducted by TARUD.

Figure 36. Kamalo PHAST training participants

[7] Mills, D., et al. 2009. Vulnerability in small-scale African fishing communities. J. Int. Dev. DOI: 10.1002/jid.

Training of Trainers (TOT) in Community Outreach and Hygiene Promotion. TARUD trained 120 participants, including 87 women (20 participants at each of the 6 sites). The training aimed to develop and strengthen the capacities of these communities to address water, sanitation, hygiene, behavioral and attitude change. The TOT approach on hygiene and sanitation promotion focused on the linkages between water, sanitation, hygiene and health in the following areas:-

- Personal hygiene and its related water uses
- Safe and unsafe water
- Waterborne and excreta related diseases.
- Environmental cleanliness
- Food handling and storage
- Specific behaviors such as hand washing practices, water collection, storage and use
- Latrine use and maintenance

Participants comprised mainly the Community Fisheries Centre (CFC) Management Committee, user groups, local government authorities and community elders. Trainees were tasked with reaching out to others in their communities with messages and activities. Collectively the 120 trainers at these 6 sites reached more than 5899 others during the life of the project.

Fish Handling and Hygiene Training. A total of 120 participants, including 89 women, were trained at the 6 sites (20 per site). The primary aim of the training was to raise awareness, improve knowledge and skills of fishermen, women shellfish harvesters and processors, fish processors (fish smokers, fish dryers, fish mongers) and staff of the Fisheries Department on the following modules among others:

- Good Manufacturing Practices in small scale fisheries
- Good Hygiene Practices in artisanal fisheries
- Fish handling and processing
- Environmental hygiene and sanitation

Figure 37. Members of the Sanyang fish landing site WASH Management Committee in front of the nearly completed toilet facility in March 2014.

WASH Management Committees established. Eight WASH Management Committees were established at six sites. The sites with both an oyster harvesting and fish landing site have a WASH Management Committee for each. Women are fairly well represented on the fisheries landing site WASH Management Committees, making up 30 – 50% of members. On oyster harvesting site WASH Committees, women make up the vast majority of members. WASH Committees are registered, have by-laws and each manages a dedicated WASH bank account. The project provided training in basic financial management and the use of a simple, color coded ticket system for documenting user fees to WASH Management Committee treasurers and presidents as well as to the DoFish site based and central office staff responsible for supporting and monitoring the accountability of this system.

WASH Management Plans. Validated at a stakeholder meeting, the plans identify WASH Management Committees as the governance structure that will lead behavior change efforts and manage daily operations, as well as short and long term maintenance and sustainability of the facilities. The plans ban open defecation (with monetary penalties) and set user fees for water, toilet and shower use. They also assign roles and responsibilities within the landing site community and between the landing site, local authorities and other government agencies and partners. The WASH Management planning process cultivated community ownership of WASH management through a participatory approach incorporating consultation with community members directly to make all key decisions on management measures as well as on facilities' placement and design. This approach was crucial for ensuring that operating practices and maintenance of the water and sanitary facilities and environmental soundness of the sites will be sustained. As with the fisheries management plans, the WASH management planning process made clear that management plans should be flexible to adjustment as implementation begins and experience is gained.

Figures 38 and 39 below illustrate the transformation that has resulted from USAID/BaNafaa WASH assistance at fisheries landing sites.

Figure 38. (left) Open defecation at the Brufut fisheries landing site documented during PHAST Training in the absence of latrines. (right) A temporary latrine set up at Brufut following the training to stop open defecation while waiting for construction of the new WASH facilities.

Figure 39. New WASH facilities at Brufut fisheries landing site.

In March/April 2014, the project commissioned a survey to gauge user perceptions of WASH facilities post-handover. Table 5 summarizes key results from the survey sample, showing that the majority of users perceived the facilities to be good, appreciated the design of the facilities, were very satisfied in using the facilities, found them accessible to everyone at all times and the user fees to be affordable. It is important to note that at the time of the survey facilities were still very new, with Old Jeshwang having been used the longest (4 months).

Table 5. Summary of key results from WASH user perception survey (% of respondents).

Community	Very satisfied in using the facilities	Perceive the WASH facilities to be good	User fees are affordable	Design of facilities is good	Facilities are available to all at all times
Kartong Oyster	100	100	100	100	100
Brufut Fishing	80	85	75	80	75
Kartong Fishing	95	100	100	100	100
Kamalo Oyster	66.7	93.3	86.7	100	100
Old Jeshwang Fishing	93.3	100	100	100	100
Old Jeshwang Oyster	68.75	100	100	100	93.75

Lessons Learned:

Consulting at length with stakeholders and dealing flexibly with community input was key for successful implementation and sustainability of WASH activities. Important changes to original plans were made as a result of stakeholder feedback and saved the project from investing

resources ineffectively. For example, in spite of extensive consultation with the oyster harvesting community at Abuko an environmentally appropriate and securely tenured site for WASH facilities was not identified. As a result Abuko was replaced by another priority site. Another example included allowing oyster and fisheries communities at the same landing site to have separate facilities and manage their WASH activities separately. Gender was a consideration in this decision as the women oyster harvesters have their own management structures and group solidarity that have been successful for them as a socially and economically marginalized population in The Gambia.

Providing a WASH component in the context of fisheries co-management, where fishery user groups have exclusive use rights over the fishery, favors the sustainability of WASH activities. In this context, the users have more interest in and are more likely to be benefitting economically from sanitation and hygiene improvements at landing and harvesting sites.

Awarding GAMWORKS comprehensive responsibility for delivering the WASH "hardware" including design, oversight and sub-contracting was a successful approach. GAMWORKS exhibited a high level of professionalism, flexibility and patience in accompanying the project's participatory process. Feedback received from communities about the quality of work done on the WASH facilities, as well as the conduct of GAMWORKS and its sub-contractors during construction, was very positive. This is not always the case with construction activities that bring in outside workers and temporarily disrupt the physical environment.

Identifying workable solutions for problems beyond the control of the project was critical.. For example, construction of the Tanji and Sanyang WASH facilities was unexpectedly delayed due to closure of the border between Senegal and The Gambia to commercial trucking in early 2014. Basalt stones imported from Senegal needed for the concrete was, therefore, not available. Finally, GAMWORKS proposed and used washed laterite as the second best option even though this required increasing the concentration of cement in the mixture and resulted in higher costs.

Environmental and Climate Change considerations are challenging, but critically important in siting and design of coastal WASH facilities. Figures 40, 41 and 42 below illustrate the example of Kartong where fishery landing and oyster harvesting sites could not be easily linked to the municipal water supply due to their isolated location. Drilling a borehole was also a challenge due to proximity to the shoreline and vulnerability to salinization, especially when considering climate change impacts of sea level rise and coastal erosion over the medium to long term. Separate protected wells located 250 - 500 meters distant from the sites and powered by solar panels were established as the most climate friendly and sustainable solution to water supply at these sites. Sanitation facilities at Kartong, as at many of the other sites, used a sealed, raised tank design due to the high water table, porous sandy soil and proximity to sea level.

Figure 40. WASH toilet facility at the Kartong fish landing site

Figures 41 and 42. (from left behind the tap) The U.S. Embassy Charge d'Affairs, Mme. the President of the Kartong Fish landing site WASH Committee and the CEO of GAMWORKS test the new water point. (right) Solar powered pumping and storage system for the protected well that supplies the water point located 500 meters away.

2.2 Intermediate Result 2:

Institutional capacity strengthened at all levels of governance to implement an ecosystem-based, co-management approach to sustainable fisheries, and to prevent overfishing.[8]

Key Achievements

- NASCOM and LACOMs capacity strengthened (see IR1)
- TRY Oyster Women's Association capacity strengthened. (see IR1)
- DoFish capacity strengthened
- WASH and GNSSP institutional actors capacity strengthened (see IR1)
- A total of 1,962 people trained over the life of the project, 69% of them women.
- Annual Bi-lateral (Gambia-Senegal) Co-Management meetings held
- A Comparative Cost Study on Sole Fish in The Gambia and Senegal conducted. Next steps identified.
- Scores on Governance Scorecards for the sole and oyster fisheries improving over the life of the project.
- Climate Change Vulnerability and Adaptation considered at the sub-regional and bi-lateral scales and 8 institutions with improved capacity to address climate change issues

2.2.1 DoFish Capacity Strengthened

In addition to DoFish participation in most of the activities described under IR1, the USAID/BaNafaa project provided the following specific support for capacity development of DoFish over the life of the project:

- Stock assessment training on line and in-country
- Stock assessments conducted for 2011, 2012, 2013 and 2014
- Protocol established for twice annual critical minimum data collection needs for sole and catfish stock assessment
- 4 staff attended URI Leadership in Fisheries Management Summer Institute
- 1 staff attended Population, Health, Environment course in Senegal
- Degree training completed for 2 DoFish staff in Fisheries in Nigeria
- Fish Biology Course for 10 DoFish field staff (including 5 women) completed using the Guide for the Identification of Commonly Caught Fish in the Bottom Set Gillnet Fishery in The Gambia (2012)

[8] Note that many of the activities described under IR1 also contribute to IR2.

- WASH Supervision Administrative Finance Training for landing site and central office staff.

Figure 43. DoFish Fish Biology Course participants with their Fish ID Guides.

2.2.2 Annual Bilateral Co-Management Meetings Held.

A first of its kind workshop, the Bilateral Workshop for Improved Co-Management of Artisanal Fisheries in Senegal and The Gambia supported by USAID/BaNafaa was held in Banjul in May 2012. It brought together artisanal fishers, women, fish mongers/dealers, fisheries non-governmental organizations, and government officials from The Gambia and Senegal to deliberate on issues of common concern and interest, including migration, dual registration of fishing canoes, eco-labeling, cross-border trade in fish and impacts on local economies. Also to identify possible areas of collaboration to sustainably manage shared fish stocks including monitoring, control and surveillance. In addition, the workshop participants shared lessons learned concerning approaches for improved co-management of artisanal fisheries. These included institutional and legal frameworks, establishment of marine protected areas and reserves, and introduction of seasonal closures and effort control as management measures to respond to unsustainable resource exploitation as a direct consequence of open access, excess fishing effort and irresponsible fishing practices. Experiences were drawn from Cayar, Senegal, and the sole and oyster fisheries in The Gambia.

As documented in the mid-term evaluation of the USAID/BaNafaa Project, the event was well received and resulted in the recommendation that it be institutionalized and held annually. The second annual gathering of the forum was hosted by NASCOM in The Gambia in November 2013 and was attended by more than 80 participants from The Gambia and Senegal.

Recommendations of the second meeting included

- Re-selection of an Ad hoc Bi-lateral Committee of 8 members including a representative from each country, fisherman, woman representative of women in the sector and NGOs.

- Senegal to seek ways to replicate the Gambia's co-management blue print on delegation of "Authorized Powers" to artisanal fisheries professional organizations through identification and establishment of a national Apex body. Local Artisanal Fisheries Councils (CLPA) in Senegal are Government initiatives, therefore the need to work with autonomous Apex bodies and/or establish one.
- Fisher representatives should be included in the national delegations in all future meetings on the bilateral (reciprocal) fishing agreement between The Gambia and Senegal.
- The workshop participants resolved to combat IUU fishing in all its forms, in the two countries.
- Conduct joint research and simultaneous conservation initiatives such as closed areas, mesh size harmonization and sharing information on research, data collection and stock assessment. A joint framework for management of shared sole stocks is one immediate need as The Gambia pursues MSC certification for the sole fishery and Senegal is considering such an initiative as well.
- Convene a bilateral workshop once a year at alternate venues following two meetings held in the Gambia (next one in Senegal). Concerning sustainability of the bilateral meeting, both Governments should consider including it in their annual budget plans.

2.2.3 Comparative Cost Study on Sole Fish: The Gambia and Senegal.

The value chain study for sole conducted by USAID/BaNafaa identified the fact that an unknown quantity of sole is transshipped into Senegal and much of this transshipment is not being fully captured by the DoFish statistics (and distorts Senegal sole capture statistics). Implications for marketing an eco-labeled product is also a concern. Ecolabeling of sole in The Gambia may help curtail this trade, but other measures might be identified to bring this illegal trade into the open. Therefore, additional assessment of the incentives for cross border trade was carried out to fully understand market context and opportunities for improved marketing that benefits more fully Gambian fishermen, processors and exporters.

Although data collection on illegal trade was not successful due to the timing of the study during a period of particularly low movement of product, the study found significant differences between the Gambian and the Senegalese context at all levels in the sole value chain. The differences create an unfavorable competitive environment for The Gambia. The report concluded that the competitiveness, profitability and sustainability of the Gambian fish processing industry depend on the issues of 1) financing, 2) utilities reduction costs, 3) infrastructure improvements, 4) associated industries, 5) the supply of raw materials, 6) information on sole trans-shipment, and 7) creation of an interagency Committee. The key recommendation was to draft a cabinet paper to engage discussion of these issues at the highest levels within the Government. This paper was considered important in setting the agenda for negotiations of renewal of Senegal-Gambia bilateral fisheries agreement.

In May 2013, an initial meeting to begin organizing this effort was held and the Deputy Permanent Secretary (DPS) of the Ministry of Fisheries and Water Resources was designated by participants to lead the next steps in this process. Membership of the Interagency Committee included the following: MoFWR, DoFish, Ministry of Trade, Employment sand Regional

Integration, GIEPA, Ministry of Finance and Economic Affairs, Office of The Vice President, TAGFC and NASCOM and two fisheries associations GAMFIDA and NAAFO. The Year 5 workplan anticipated that USAID/BaNafaa staff and partners (NASCOM) would facilitate this work, led by the DPS with the aim of a draft Cabinet Paper by December 2013. Due to the unexpected passing of Ousman Drammeh, USAID/BaNafaa Project Manager, this activity was not realized before the end of the project.

Progress on Fisheries Infrastructure Development in The Gambia

The newly constructed US$8.5M Banjul Fisheries Jetty was Tuesday (July 9th, 2013) handed over to the management of the Gambia Ports Authority (GPA) through a signed management contract by the Minister of Fisheries and Water Resources (Daily Observer, July 10, 2013)

The Fisheries Jetty was among the sub-projects sponsored by the African Development Bank (ADB) and the Arab Bank for Economic Development in Africa (BADEA) and coordinated by the Gambia Artisanal Fisheries Development Project under the Ministry of Fisheries. The acting deputy managing director of Gambia Ports Authority (GPA) said "The objective to have the jetty will include the need to earn foreign exchange by providing the adequate service to foreign and local fishing trawlers on the industrial level as well as catering for artisanal fisheries for the local fisher folk."

The jetty has a total length of 125 meters. There are 2 piers; pier 1 has a 85 meter length access bridge and a 60 meter length pier head; Pier 2 – the concrete deck part of the jetty which is connected to pier 1 – has a 40 meter length access bridge and a pier head of also 60 meter length for industrial fishing vessels. There are two floating pontoons attached to access bridge of pier 1 each of 20 meter length for artisanal canoes to enable fish to be offloaded from commercial artisanal fishing boats.

2.2.4 Goverance Scorecards Improving

Governance Scorecards for both the Sole fishery and the Oyster and Cockle fishery have been used since the beginning of the project to track overall progress in key categories. The baseline score recorded in 2009 improved significantly for both fisheries in 2010. Results for both the Sole and the Cockle and Oyster fisheries continued to improve in 2011 (scored in January/February 2012 as the two co-management plans were officially approved). The last and final scoring was done in September 2013 (see results in Table 6 below). With the approval of the two co-management plans, First Order Outcomes focusing on commitment and capacity showed significant improvement. Second Order Outcomes, focusing on changes in institutional, individual and investment behavior progressed more gradually after an initial leap in Year 1. Of note in the 2012/13 scoring is that, with implementation of the plans, stakeholders have a more in-depth understanding of the dimensions of fisheries governance, have raised their expectations and are less willing to give high scores.

Table 6: Governance Scorecard Results

Outcome Order	Sole				Cockles and Oysters			
	2009	2010	2011	2012/13	2009	2010	2011	2012/13
First Order Outcomes	14	29	36-37	36-38	11	28	33	34-36
Second Order Outcomes	14	31	32-37	32-35	10-12	27-29	35	38-40

An additional perspective on management of the Sole and Oyster fisheries in The Gambia was explored through collaboration with Dr. Chris Anderson, a URI Economist (now at the University of Washington) who was developing a Fisheries Performance Indicator tool for The World Bank. The World Bank was interested in testing the tool in the context of developing countries where significant investments in improved fisheries management were being undertaken. This tool was applied in more than 25 countries around the world in various fisheries. Chris Anderson visited The Gambia in January 2012 and summarized the pre-USAID/BaNafaa status of the two fisheries in the diagrams below. Unfortunately the exercise was not repeated after 2 years as anticipated to capture changes.

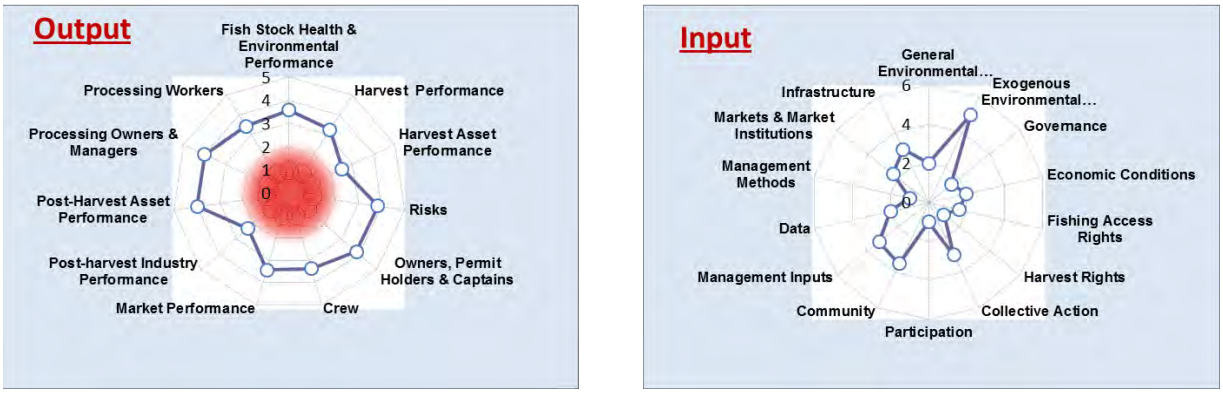


Figure 44. Baseline (retrospective pre-USAID/BaNafaa) Fisheries Performance Indicators for The Gambian artisanal sole fishery.

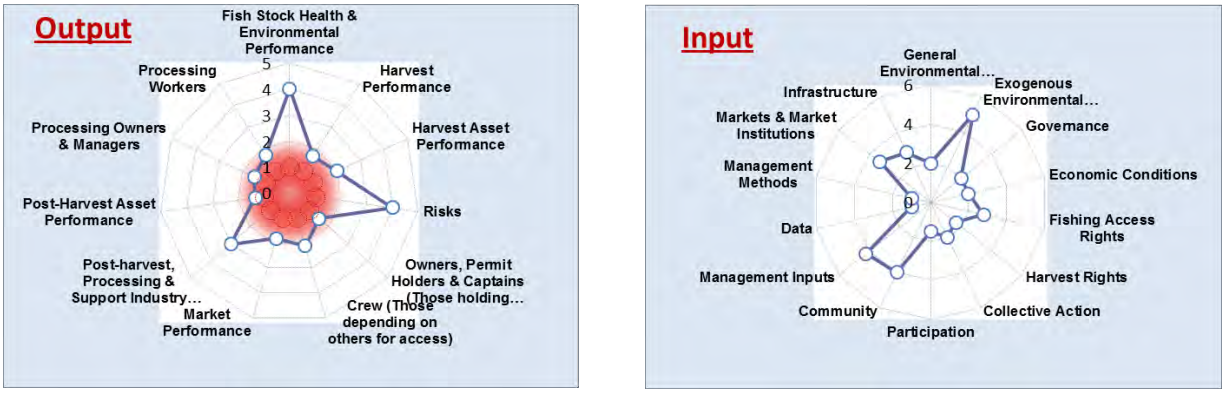


Figure 45. Baseline (retrospective pre-USAID/BaNafaa) Fisheries Performance Indicators for The Gambian oyster fishery.

2.2.5 Climate Change Vulnerability and Adaptation

1. Regional Climate Change Workshop (2011)

Consideration of climate change is part of the underpinning of an ecosystems-based approach to fisheries management. In March 2011, the USAID/BaNafaa project with WWF-WAMER convened a regional workshop in Senegal with a focus on building awareness of climate change issues in fisheries and MPAs and strategies for incorporating these issues into fisheries and marine conservation decision-making. The workshop was attended by representatives from each of the seven countries of the Commission Sous-Régionale des Pêches (CSRP) that includes Cape Verde, Gambia, Guinea, Guinea Bissau, Mauritania, Senegal and Sierra Leone.

The take home message was that coastal and marine areas are already affected by multiple stressors with climate change becoming a more serious threat when coupled with these other anthropogenic impacts. Coastal erosion, deforestation and habitat fragmentation become even more serious problems in coastal locations and fishing communities when coupled with the projected impacts of climate change. Non-sustainable resource use, including over fishing, reduces the adaptive capacity of natural systems and thus decreases the resilience to respond to climatic changes. Sand mining, alteration of waterways, population pressure and improper siting of infrastructure leave both the communities and the environment with increased vulnerability to climate change. It was concluded that anticipatory adaptation to accelerated negative environmental changes does not need to wait for specific climate scenarios, but is more reliant on the examination of current vulnerabilities and the range of possible no-regret strategies.

2. Bi-Lateral (Gambia/Senegal) Climate Change Vulnerability Assessment (2012)

In July 2011, the USAID/Ba-Nafaa project received approval for an add-on component for a bilateral fisheries climate change vulnerability assessment of the Saloum Delta and Gambia River estuary area. The project contracted an interdisciplinary team coordinated by WWF-WAMPO to assess the vulnerability of central coastal Senegal (Saloum) and The Gambia marine and estuarine ecosystems and fisheries communities to climate change. USAID's "Adapting to Coastal Climate Change: A Guidebook for Development Planners" was a key reference document. Local experts compiled, reviewed and analyzed the considerable body of work already available on the actual and potential impacts of climate change in the study area. In some cases, limited additional data was collected and analyzed. The components were:

- Inundation vulnerability by Pr. Isabelle Niang from the University of Dakar.
- GIS mapping of vulnerability by Malick Diagne from Centre de Suivi Ecologique, Dakar.
- Socio-economic vulnerability by Cheikh Tidiane Sall.
- Mangrove vulnerability by Richard Dacosta from Wetlands International.
- Fish species vulnerability by Famara Darboe, Assistant Director of Fisheries, The Gambia.

In April 2012, a bi-lateral workshop attended by 44 participants was held in The Gambia to review the findings of the reports and their recommendations among a broad group of 18 government and civil society stakeholder institutions from Senegal and The Gambia.
The vulnerability assessment concluded that significant degradation of landscapes with its consequence on communities' livelihoods and coastal and marine ecosystems is occurring in this zone since the early 1960s. Climate change (sea level rise, coastal erosion, mangrove degradation soil salinization), among other causes, is a major driver of these changes. Coastal and marine zones such are among the most vulnerable. Key findings included:

- In the scenario of a 2m inundation level by 2100 (associated with a 20-49cm sea level rise), 52% of the Saloum Delta area will be inundated as well as the City of Banjul, the village of Albreda and 90% of the mangrove in The Gambia Estuary. Islands will vanish, as well as more than 2/3 of human settlement living on islands in the Saloum Delta.
- Reduced precipitation (35% drop) and less regularity of rainfall (1 year in 5 flooding) will result in salt intrusion, less exposure of the mangrove ecosystems to fresh water, less organic matter discharge to the ocean and subsequent increased mangrove die-back, disturbed fish biological processes (food chain and reproductive state) and loss of rice fields and orchards.
- The whole coastline open to the ocean is exposed to coastal erosion. The sandy nature of beaches make the coastal zone very sensitive to increasing intensity of wind and waves.
- Livelihoods in the study area are heavily dependent on fisheries, agriculture and other ecosystem-based activities, including tourism. Value added and alternative livelihoods are limited for the most climate change vulnerable communities.
- Positive examples of adaptive capacity include two ecosystem-based fisheries co-management plans recently approved in The Gambia, mangrove restoration activities in several communities in both countries in recent years, and pilot alternative economic activities in The Saloum, such as salt production, that capitalize on changing conditions.

Participants considered how this body of knowledge, although incomplete and evolving, might serve as a foundation for adaptive action to reduce the vulnerability of the study zone's fisheries, fishing communities and coastal ecosystems which are of significant local, national, bi-lateral, regional and global importance. Priority vulnerability "hotspots" within the study area, priority socio-economic activities and priority climate change adaptation measures within the scope of the USAID/BaNafaa Project were identified as shown in the Figure 46 below. These recommendations provided the basis for a proposal to USAID in July 2012 to add funds to the project to implement Climate Change Adaptation (CCA) activities. The proposal was not acted on by USAID, but workshop participants continued to consider the information and analyses introduced at the workshop in their work at their respective institutions.

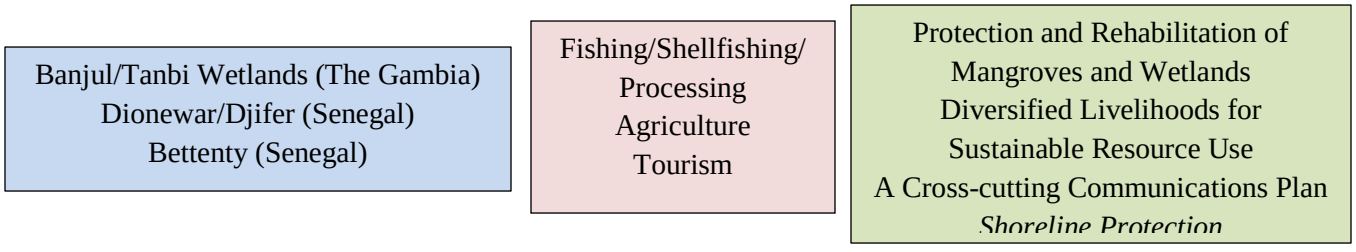


Figure 46. Workshop Outputs for recommended priority areas, economic activities and adaptation measures

2.3 Intermediate Results 3 and 4:

Nursery areas and spawning areas for critical life stages of commercially important species and for associated marine turtles and mammals are protected

Change unsustainable and destructive marine resource use practices that threaten improved biodiversity conservation in the West Africa Marine Ecoregion.

Key Achievements

Implementation of the Fishery Co-Management Plan for The Gambia Sole Complex (see IR1).

- 121,245 ha under improved management (the entire Atlantic Coast of The Gambia out to 9 nm)
- Seasonal closure for all species and gear types out to 1 nautical mile from May to October
- Fish size limits and gear restrictions.
- Amendment to increase mesh size limits from the current 80mm to 92mm and to integrate marine Catfish signed in December 2013.

Implementation of Oyster and Cockle Fishery Co-Management Plan for the Tanbi Special Management Area (see IR1).

- 6,304 ha under improved management (the entire Tanbi Wetlands National Park)
- Seasonal Closure for Oysters from July to February (8 months)
- Gear restrictions for mangrove protection
- Mangrove reforestation
- Shellfish size limits
- Shellfish Sanitation Planning, including bi-weekly water quality testing , bi-annual shoreline sanitation surveys and provisional water quality classification zones identified and mapped.

Improved biophysical conditions in areas under improved management generally showing positive trends

Traditional Ecological Knowledge obtained from the fishers at landing site level and also from community meetings and training workshops as part of the co-management planning process has confirmed that the sole fish come annually from deep waters to shallow waters and into the estuary to spawn, and juveniles tend to stay in shallow waters close to the shore until they are mature enough to go inhabit deep waters. This is true for most species and the fishers have asserted that the spawning periods for the majority of marine fish species is between May and October (the onset of the rainy season and the end of the rainy season in The Gambia). The consensus among fishers to declare area closure for all fisheries of 1 nautical mile from the shoreline for 6 months (May to October) each year is a management measure that will allow fish to spawn and juvenile fish to grow without being targeted for capture. It should also be noted that by-catch studies for the sole fishery showed that marine turtles and mammals are not at risk from the sole fishery in The Gambia.

In the Oyster and Cockle Co-Management Plan for the Tanbi Wetlands National Park seasonal closure for oyster harvesting is specified during the spawning season and has been extended for longer than was previously practiced to reduce the take of juvenile oysters. The co-management plan also specifies gear restrictions that are designed to reduce damage to mangroves during the

harvesting process. As specified in the co-management plan, TRY is also undertaking mangrove reforestation efforts. The Shoreline Shellfish Sanitation Planning process, including water quality testing and comprehensive Shoreline Sanitation Surveys for the Tanbi undertaken at regular intervals provide critical information about pollution hotspots in this protected mangrove ecosystem. They have already resulted in concrete actions that have improved management of this protected area.

Figure 47. 121,245 hectares under improved management for the artisanal sole and marine catfish fishery out to 9nm.

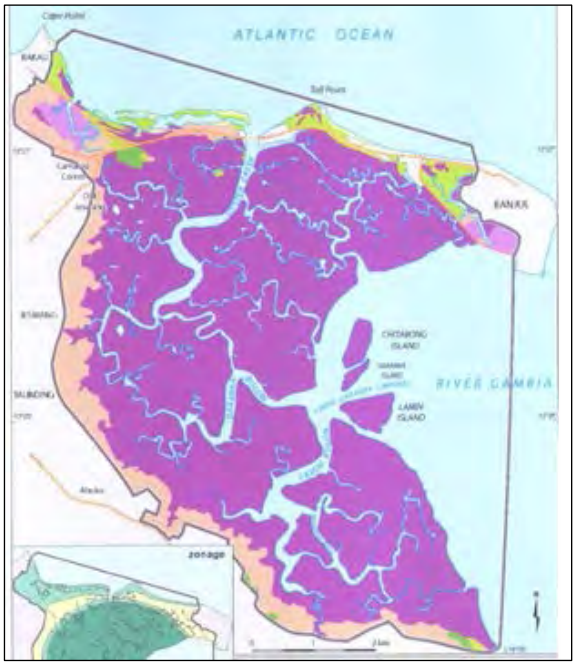


Figure 47. 6,304 hectares under improved management for the oyster and cockle fishery in the Tanbi

3. Sustainability

The perspective for the sustainability of participatory, ecosystem-based co-management of the sole and oyster and cockle fisheries in The Gambia is strong as USAID/BaNafaa project assistance ends.

At the beneficiary level: The project Closeout Workshop was a day-long event in March 2014. Seventy-nine participants (45 male and 34 female) from 25 organizations attended. Opening remarks highlighted the concept that the end of the USAID/BaNafaa project represents the beginning of a new phase of engagement for Gambian stakeholders to take the lead in continuing and expanding upon the sustainable fisheries management efforts developed so successfully with project assistance.

Figure 48. The TRY Coordinator facilitates a discussion of TRY achievements in partnership with the USAID/BaNafaa Project

Stakeholders and beneficiaries gave powerful personal testimony, illustrating the impacts they have experienced as a result of the project. A few examples that speak to the transformation of attitudes at the individual level and collectively at the community level facilitated by the project are as follows:

- Kadiatou Jallow, Brufut landing site artisanal fish processor and officer of NASCOM, spoke about how she has an education and how education is not only good for office jobs. Her education has enabled her to be a strong leader in the fish processing and drying business that she inherited from her mother. She is able to read and write and apply knowledge gained from working with initiatives like the USAID/BaNafaa Project to make a difference in her community and for the sustainability of fisheries livelihoods, "My knife is my pen…"

- Eliman Sarr, President of NASCOM shared that fishermen from Barra on the north bank of the mouth of the Gambia River, where the closed area designated under the Sole Co-Management Plan does not reach, have seen the size of lobsters and other fish harvested this year after the 6 months 1 nautical mile closed area was implemented and enforced. They too want to have their area included in the closure and implement the other management measures in the plan. This feedback demonstrates the value of the ecosystem approach, as the measures implemented for the sole fishery are perceived by fisherfolk to have visible, positive impact on a range of species of value and on the ecosystem as a whole.

- Isatou Jarjue, TRY Kartong, explained how the oyster women now know who they are. They know what we are doing and why. They protect the mangroves and the mangroves are the bank of the fisheries. Likewise, the oyster women are the bank of the fisheries. Their actions protect the mangroves and the fisheries for themselves and for everyone.

At the Government of The Gambia level: Actions taken by the Government as the project ended are favorable for sustainability of project achievements. The Ministry of Fisheries and the Department of Fisheries has reintegrated USAID/BaNafaa staff into key positions where they will continue to strongly support and champion the two fisheries co-management plans and co-management institutions as well as a sustainable fisheries agenda in general for The Gambia and in the region. Dr. Bamba Banja, who started with the project in 2011 as WASH Coordinator and ended as Project Manager, was appointed Permanent Secretary in the Ministry of Fisheries.[9] In this position Dr. Banja is well placed to guide the Ministry and the Department of Fisheries to ensure the sustainability of USAID/BaNafaa's achievements and to build on them. In fact several actions have already been taken. These include:

- Correction of an error in the gazetted version of the sole co-management plan meant to define the 9 nautical mile exclusive use zone for NASCOM.
- An Executive Decision to prepare a Cabinet Paper on the Way Forward for USAID/BaNafaa project activities following submission of the Debriefing Report prepared by the project for the Minister of Fisheries to the Office of the President.

Two DoFish staff seconded to WWF for the duration of the project, Kanyi Babanding and Gibril Gabis, returned to DoFish as of January 2014 after the USAID/BaNafaa WWF sub-contract was closed out. Kanyi Babanding was assigned to work full time with TRY supporting scale up and outreach to other oyster harvesting communities and providing technical assistance on oyster aquaculture activities. Gibril Gabis has been assigned as the DoFish representative at the Brufut fisheries landing site, one of the principal sole landing sites and a site that benefitted from the USAID/BaNafaa WASH component. They have each been given the use of a USAID/BaNafaa project motorcycle that WWF transferred to DoFish.

At the Co-Management Institution level: As discussed under IR2 above, empowerment of the two co-management institutions (NASCOM and TRY) to lead sustainable fisheries management for their respective fisheries has been achieved legally through the approved and gazetted plans and the use rights granted therein. The project has assisted NASCOM and TRY to develop the

[9] Now a stand-alone Ministry as Water Resources was shifted to the reorganized Ministry of Environment, Climate Change, Water Resources, Parks and Wildlife.

capacity and to gain the practical experience necessary to carry out their institutional mandates. The project has provided NASCOM and TRY and the constituencies they represent the opportunity to increase their awareness, to seek out, create and share knowledge, to identify best practices and to take collective action to transform management of their fisheries towards sustainability. TRY members expressed it well when they said, "We have made it to grade 12, we won't go back to grade 1."

Demand to TRY and NASCOM from fishing and oyster harvesting communities not included in the Co-Management Plans is also one of the strongest indications that these institutions and the plans they are managing are viewed as high value added by fisherfolk.

4. Building on Project Achievements - Next Steps

- A USAID/BaNafaa project debriefing report was prepared for the Minister of Fisheries in March 2014. The Ministry shared the report with the Office of the President and an Executive Decision was given to prepare a Cabinet Paper on the Way Forward for USAID/BaNafaa project activities. Many of the points below were included in the Minister's debriefing report.

The Sole Fishery:

- The Sole Fishery Stock Assessment should be updated annually. The data collection protocol agreed to in December 2013 should be implemented.

- Research on marine catfish should be continued and hook size limits added to the Co-Management Plan management measures through the amendment process (by signed MOU) identified in the Plan. More in-depth analyses should also be supported, including a value chain study, stock assessment, otolith analysis and additional gear studies. These should be recommended as part of the future research plan for Catfish.

- Support should be provided by stakeholders to NASCOM to continue to conduct Annual Co-Management Plan review meetings.

- Another MSC pre-assessment of the sole fishery should be conducted. Eventually, full certification should be pursued. Processors should then be certified for traceability standards and use of the eco-label to market Gambian sole.

- A joint framework should be put in place for the sustainable management of the sole stock shared between The Gambia and Senegal. This is also critical for MSC certification.

- Continued support should be provided by institutional stakeholders for annual bi-lateral co-management meetings.

- Sole and marine catfish co-management and use rights should be expanded to additional areas and communities in The Gambia.

- Institutional capacity of NASCOM and LACOMS should be further developed (see IR2 above for additional detail).

- A Cabinet Paper based on the Cost Comparison study of the sole fishery between Gambia and Senegal should be developed.

- Robust artisanal vessel registry should be undertaken that will enable managed access to occur in the future, especially since NASCOM is activly discussing that as per the Mauritania model.

The Oyster and Cockle Fishery:

- Oyster and cockle co-management and use rights should be expanded to additional areas and communities in The Gambia.

- A joint co-management plan for oysters and cockles in the transboundary Allahein River Estuary should be developed and approved.

- A GNSSP should be approved and sustainably implemented.

- Institutional capacity of TRY should be further developed. TRY should be supported to establish its own shellfish processing and education center, including acquisition of land and construction of the center (see IR2 above for additional detail).

- DoFish should include assessment of the stock of the "invisible fishery" in its regular fisheries statistics collection analysis and reporting.

WASH

- Government stakeholder institutions should support WASH Management Committees to manage WASH activities and facilities sustainably.

- Unmet WASH needs at additional fisheries landing and oyster harvesting sites should be addressed.

The Gambia Ecosystem-Based, Rights-Based Co-Management Experience Should Continue to be Shared Widely

The Sole and Oyster and Cockle Co-Management Plans are both available in French:

http://www.crc.uri.edu/download/Sole_Management_Plan_French_508.pdf
http://www.crc.uri.edu/download/Oyster_Management_Plan_French_508.pdf

MSC continues to share the Gambia experience broadly as an example of a developing country fishery pursuing certification. The Gambia is an MSC pilot country for fisheries in transition which helps developing countries move towards sustainability. An MSC video featuring The Gambia, among other developing country case studies is posted on the MSC. In 2014, the Chief Executive of MSC wrote a Huffington Post blog article entitled, "Fish for Good in the Developing World," citing The Gambia case and acknowledging USAID.

The Gambia Co-Management experience was shared and nicely documented in a report at a Fisheries Governance Dialogue hosted by the USAID/Integrated Coastal Management and Fisheries Governance Project in Ghana implemented by URI. One of the recommendations is that Ghana amend its fisheries legislation to explicitly mention co-management as is the case in The Gambia.

A case study of TRY's work posted on the UNDP Equator Prize website has been broadly shared following TRY's acceptance of the prize in Rio in 2012.

TRY has also presented at knowledge sharing events including The Wilson Center in Washington DC and was featured on BBC Radio.

5. Project Management

From 2009 – 2013 the USAID/BaNafaa in-country team was led by WWF/BaNafaa Project Manager, Ousman Drammeh from the WWF/Gambia Project Office. Oversight was provided by the URI/CRC Team Leader based in the U.S. WWF's in-country BaNafaa staff included two fisheries specialists seconded from the Department of Fisheries for the Life of the Project. Collaboration with the U.S. Peace Corps benefitted the project through volunteers posted with WWF and TRY and supported by the project. In late 2011 with the addition of the WASH component, URI opened its own in-country office located at the TRY Oyster Women's Association offices. Dr. Bamba Banja, USAID/BaNafaa WASH Coordinator managed the 2 person URI office. Overall in-country project management was assumed by Dr. Banja following the passing of the Project Manager in November 2013. The WWF-WAMPO sub-contract ended on December 31, 2013 and URI managed the remaining project activities through close out in April 2014.

URI/CRC implemented the project close-out plan as approved by USAID with URI project assets transferred to TRY and NASCOM. WWF transferred selected project assets to DoFish.

At the end of March 2014, the USAID BaNafaa team and URI debriefed with the Minister of Fisheries and Water Resources and the Department of Fisheries. Exit interviews were conducted with project implementing partners, WWF, GAMWORKS, TARUD, TRY and NASCOM as well as with the two URI staff.

5.2 Environmental Monitoring and Compliance

Based on the revised initial environmental evaluation (IEE) approved in 2011 for the project, an Environmental Monitoring and Mitigation Plan was in place to ensure no significant environmental impacts occurred for those actions identified in the IEE with a negative determination subject to conditions. The status on these activities is included in the Environmental Monitoring and Mitigation Report in Annex C for the LOP period through April 2014.

5.3 Branding

The USAID/BaNafaa Project provided information through many existing channels. This included through presentations at meetings, conferences, outreach sessions and other forums as well as through print media—e.g., peer-reviewed articles in professional journals, locally produced Information, Education and Communication (IEC) materials, pamphlets, brochures, policy briefs, guides, and PowerPoint presentations. The main target audiences included local communities, local government agencies, national policymakers, grassroots NGOs, and other donors. Acknowledgement was always given to the generous support of the American people through USAID in all Project communications and materials. Also recognized were partnerships and support from local government ministries, agencies and departments who participated in various activities of the Project.

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

Item	***Type of USAID marking***	***Marking Code***	***Locations affected/ Explanation for any 'U'***
Press materials to announce Project progress and success stories	USAID logo (co-branded as appropriate)	M	Primarily a Gambian audience
Project brief / fact sheet	USAID logo (co-branded as appropriate)	M	Primarily a Gambian audience
PowerPoint presentations at meetings, workshops and trainings	USAID logo (co-branded as appropriate)	M	Primarily a Gambian audience
Brochures/posters on environmental issues	USAID logo (cobranded where/as appropriate)	M	Primarily a Gambian audience
Landing or marketing site facility improvements	USAID logo / stickers (cobranded where/as appropriate)	M	Primarily a Gambian audience
Project Office/room within WWF/Gambia office in Banjul	Project sign in English and local dialect name as well *(USAID/BaNafaa*) but no USAID identity used	M	Primarily a Gambian audience
CRC Project Office/room within TRY/Gambia office in Banjul	Project sign in English and local dialect name as well *(USAID/BaNafaa*) but no USAID identity used	M	Primarily a Gambian audience
Fisheries management plans		PE	Primarily a Gambian audience
Project vehicles, office furnishings and computer equipment purchased for project administration.	No USAID identity used	U	Standard exclusions under USAID marking guidelines/policies

Marking Codes: M = Marked, U=Unmarked, PE = Presumptive Exception, W=Waiver

5.4 TraiNet Data on Trainings Conducted With Project Assistance

The USAID/BaNafaa Project Office compiled information on all training events as required by USAID. This information was submitted to CRC where the data was entered into the TraiNet electronic reporting system. The following Table summarizes Life of Project trainings.

Training program	***Location***	***Start date***	***End date***	***Participants***		
				Male	**Fem**	**Total**
Study Tour to Sine Saloum	Senegal	12/16/2009	12/18/2009	1	31	32
Co-management Training on Sole Fishery	The Gambia	1/25/2010	01/26/2010	37	3	40
Co-management Training on the Oyster Fishery	The Gambia	02/01/2010	02/02/2010	2	51	53
Aquaculture training	The Gambia	01/12/2010	02/05/2010	60	0	60
Training on Entrepreneurship (study tour to Baddibu)	Gambia	03/18/2010	03/19/2010	2	11	13
Stock assessment training	The Gambia	03/15/2010	03/22/2010	14	5	19
Training on Improved Processing & Packaging	Gambia	30/4/2010	12/4/2010	0	300	300
Coastal Adaptation to Climate Change	US	4/6/2010	25/6/2010	2	0	2
Cayar Study Tour	Senegal	13/6/2010	18/6/2010	11	4	15
Oyster Aquaculture Training	Gambia	17/6/2010-	28/6/2010	1	36	37
Water Quality Assessment Training Workshop	Gambia	23/6/2010	23/6/2010	18	5	23
Fisheries Leadership	US	16/8/2010	3/9/2010	3	1	4
Biostatistics course	Gambia	09/20/2010	09/27/2010	10	2	12
GRAND TOTAL YEAR 1				***161***	***449***	***610***
Micro-credit and enterprise development	Gambia	25/10/2010	2/11/2010.	0	250	250
Climate Change workshop	Senegal	3/22/2011	3/25/2011	52	8	60
Study tour to Tanzania on res. mgt and livelihood development	Tanzania	2/7/2011	2/12/2011	0	1	1
Water quality and shellfish sanitation	USA	5/21/2011	6/5/2011	3	0	3
Fish stock assessment	USA	5/21/2011	6/12/2011	3	2	5
MPA-PRO Certification Training	Kenya	6/13/2011	6/17/2011	1	0	1
BS Degree Training – Fisheries technology	Nigeria	5/15/2011	8/16/2013	1	0	1
BS Degree Training – Fisheries technology	Nigeria	8/29/2011	9/30/2012	1	0	1
TRY members to FENAGIE	Senegal	09/11/2011	9/15/2011	0	4	4

GRAND TOTAL YEAR 2				***61***	***265***	***326***
CUMULATIVE GRAND TOTAL TO DATE END YEAR 2				***222***	***714***	***936***
PHE workshop	Senegal	12/4/2011	12/07/2011	0	1	1
Training of the Facilitators for WASH Needs Assessment	The Gambia	12/27/2011	12/29/2011	8	2	10
TRY literacy training	The Gambia	11/2011	On-going	0	30	30
Shellfish Sanitation Shoreline Survey Training	The Gambia	1/5/12	1/11/12	8	0	8
Shellfish Sanitation Shoreline Survey Training	The Gambia	1/16/12	1/16/12	25	5	30
USAID Environmental Compliance Training	Ghana	3/19//12	3/23/12	1	0	1
Stock Assessment	The Gambia	1/20/2012	09/30/2012	2	0	2
TRY Microfinance training	The Gambia	2/6/12	2/24/12	0	67	67
TRY hygiene/food handling training	The Gambia	1/31/12	2/1/12	0	90	90
Bi-lateral Climate Change Vulnerability Assessment Workshop	The Gambia	4/10/2012	4/11/2012	35	9	44
WASH Needs Assessment Stakeholder Workshop	The Gambia	4/18/2012	4/18/2012	25	13	38
Shellfish Sanitary Shoreline Survey Report Stakeholder Workshop	The Gambia	4/19/2012	4/19/2012	17	4	21
Bi-lateral Fisheries Co-Management Workshop	The Gambia	5/30/2012	5/31/2012	60	25	85
Population, Health Environment URI/Summer Institute	USA, Rhode Island	6/4/2012	6/22/2012	2	0	2
Fisheries Leadership	USA, Rhode Island	7/2/2012	7/20/2012	2	1	3
GRAND TOTAL YEAR 3				***186***	***247***	***433***
CUMULATIVE GRAND TOTAL TO DATE END YEAR 3				***408***	***961***	***1369***
Administrative/Finance Training	The Gambia	11/12/2012	11/14/2012	6	3	9
PHAST Training (Brufut)	The Gambia	11/27/2012	11/29/2012	16	24	40
PHAST Training (Old Jeshwang)	The Gambia	12/17/2012	12/19/2012	9	31	40
PHAST Training (Kartong)	The Gambia	01/7/2013	01/09/2013	5	35	40
PHAST training (Kamalo)	The Gambia	01/21/13	01/23/2013	0	40	40
Administrative/Finance Training follow-up	The Gambia	03/18/2013	03/18/2013	5	3	8

WASH TOT – Community Outreach and Hygiene Promotion – Brufut	The Gambia	04/17/13	04/19/13	10	10	20
WASH TOT – Community Outreach and Hygiene Promotion – Kartong	The Gambia	04/23/13	04/23/13	4	16	20
WASH TOT – Community Outreach and Hygiene Promotion - Old Jeshwang	The Gambia	04/30/13	05/02/13	5	15	20
WASH TOT – Community Outreach and Hygiene Promotion – Kamallo	The Gambia	05/15/13	05/17/13	0	20	20
Fish Biology Course	The Gambia	03/01/13	04/16/13	6	5	10
WASH Sites Fish handling and hygiene – Brufut	The Gambia	8/17/2013	8/19/2013	10	10	20
WASH Sites Fish handling and hygiene Jeshwang	The Gambia	7/29/2013	7/31/2013	3	17	20
WASH Sites Fish handling and hygiene – Kamalo	The Gambia	8/1/2013	8/3/2013	0	20	20
WASH Sites Fish handling and hygiene – Kartong	The Gambia	8/14/2013	8/16/2013	2	18	20
GRAND TOTAL YEAR 4				**81**	**266**	**347**
CUMULATIVE GRAND TOTAL TO DATE END YEAR 4				**489**	**1227**	**1716**
Bi-lateral Co-Management Workshop	The Gambia	11/11/2013	11/11/2013	28	10	38
Water quality zone mapping	The Gambia	January 2014		8	0	8
PHAST Training Tanji	The Gambia	1/17/14	1/19/2014	21	19	40
WASH supervision and Management Committee Admin./Fin. Training	The Gambia	1/24/2014	1/24/2014	10	30	40
PHAST Training Sanyang	The Gambia	1/31/2014	2/2/2014	23	17	40
WASH TOT – Community Outreach and Hygiene Promotion - Sanyang	The Gambia	2/5/2014	2/7/2014	7	13	20
WASH TOT – Community Outreach and Hygiene Promotion – Tanji	The Gambia	2/9/2014	2/11/2014	7	13	20
WASH Sites Fish handling and hygiene Sanyang	The Gambia	2/14/2014	2/16/2014	9	11	20
WASH Sites Fish handling and hygiene Tanji	The Gambia	3/5/2014	3/7/2014	7	13	20
GRAND TOTAL YEAR 5				**120**	**126**	**246**
CUMULATIVE GRAND TOTAL TO DATE END YEAR 5				**609**	**1353**	**1962**

5.5 Estimated Financial Status

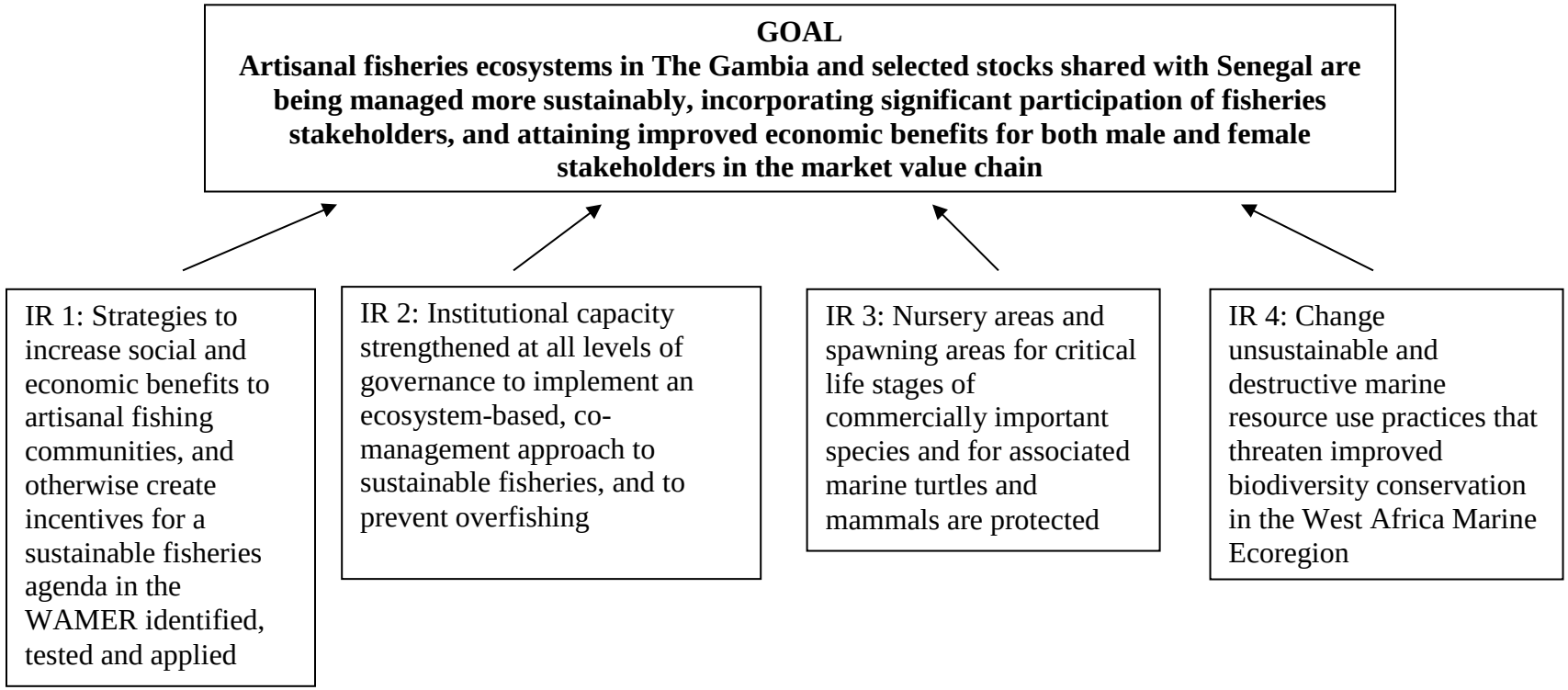
The following tables show a pipeline analysis of expenditures in relation to obligations through the end of the project **April 30, 2014** and a breakdown of expenditures by administrative line item for the LOP.

AMOUNT SUB-OBLIGATED		3,414,566
Total federal outlays as of last SF 425/voucher		
Period Covered In Last SF 425	March- June 2014 2	3,412,192
Estimated Expenditures		0
TOTAL EXPENDITURES (Amt on SF 425 + Recent Expenditure)		$3,412,192
BALANCE OF SUB-OBLIGATED FUNDS REMAINING		$2,374

LOP	**Total**
Personnel	546,332
Fringe	211,267
Consultants and In Country Staff	73,917
Operating	263,164
Subagreements	1,695,690
Travel	231,504
Capital Equipment	25,255
Indirect	365,061
Total	**3,412,192**

Appendix A. Results Framework & Life-of-Project (LOP) Targets

The Project Results Framework below is organized by Project Goal and IR. The Gambia - Senegal Sustainable Fisheries Project contributes directly to USAID West Africa Regional Office's Environment & Climate Change Response (ROECCR) Results Framework, specifically IRs 1, 3 and 4 as per the May 2011 draft below. Each IR in the Gambia - Senegal Sustainable Fisheries Project Results Framework has one or more indicators and LoP Targets that are shown in the table on the following pages. Indicators were harmonized and reduced in number in the Year 4 workplan to reflect USAID Standard Indicators.



	Indicator	LOP Targets	Comments
IR 1			
2	No people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance (ROECCR 2.1.1)	220	Does not control for double counting of the same individuals if they received assistance (i.e., training) that improves their economic benefits on multiple occasions. Original LOP was significantly underestimated.
W1a	No of people with improved access to sanitation facilities	23,175	Adjusted from Year 3 target of 56,000 and Year 4 target of 20,000. [10]
W1b	No of people with improved access to water facilities	11,663	Separated from sanitation and adjusted from Year 3 target of 56,000 and Year 4 target of 20,000. [11]
W2	Number of persons receiving Participatory Hygiene and Sanitation Transformation (PHAST) Training.	240	40/site x 6 sites = 240
W3	Number of persons receiving training and outreach messages on hygiene promotion	6000	1000/site x 6 sites = 6000
W4	Community water and sanitation committees established and trained with program assistance	6	Original estimate based on 6 sites. Two sites (Old Jeshwang and Kartong) have both a fishery and an oyster harvesting community. Each have separate WASH facilities and a WASH Management Committee. Total committees will be 8.
IR 2			
4	No of institutions with improved capacity to address NR, BD, climate change, water issues as a result of USG assistance (ROECCR 4.1.1)	13	Does not include those reported under CC3. Does not double count the same institution receiving multiple capacity strengthening interventions.
5	Number of people receiving USG supported training in natural resources management and/or biodiversity conservation. (F 4.8.1-27)	1958 (gender disaggregated)	= Trainet. Does not control for double counting of the same individuals receiving multiple trainings. Original LOP of 200 was a significant underestimate. LOP now est. at 1,958.

[10] The numbers reported for sanitation have been separated from those for water as per USAID standard indicators. The original number of 56,000 was revised downwards to 20,000 in Year 4 due to the larger number of smaller sites selected for the initial round of interventions and the elimination of one of the largest sites, Banjul, due to significant problems with relocation of the landing site as a result of port construction. In Year 5 it is adjusted to 23,175 based on the data in Annex 4 of the WASH Needs Assessment Validation Workshop Report. For each of the 6 sites (Brufut, Tanji, Sanyang, Old Jeshwang, Kamalo, and Kartong) the total users plus 25% of the total population as per the 2003 census was used to estimate the number gaining access to the improved facility.

[11] The number for water now that it is separated out is only 11, 663 because at the last 2 WASH sites (Sanyang and Tanji), only sanitation facilities will be added with USG assistance. Water points already exist.

6	Improvements on a governance scorecard covering, goals, constituencies, commitment and capacity dimensions, including measures that legislation and regulations are being implemented and complied with, and budgetary investments by government in fisheries management[12]	Qualitative increases on score card criteria for Gambia EB-fisheries mgt	
11	Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change (mitigation or adaptation) and/or biodiversity conservation officially proposed, adopted, or implemented as a result of USG assistance (ROECCR 4.3.1)	2	
CC1	Number of climate vulnerability assessments conducted as a result of USG assistance	1	
CC2	Number of stakeholders using climate information in their decision making as a result of USG assistance	30	= number of participants at the vulnerability assessment workshop as the workshop prioritized actions for an adaptation proposal based on analysis of VA findings.
CC3	Number of institutions with improved capacity to address climate change issues as a result of USG assistance	8	= number of institutions at the CCVA Workshop.
IR 3 & 4			
12	No. of Hectares in areas of biological significance under improved natural resource management (ROECCR 1.1): • Hectares covered by the fisheries management plan defined as the range of fishing fleets targeting these species • Oyster fishery estuarine and mangrove areas designated and allocated as community managed zones, including no-take areas	FMP Areas: • Sole = 12nm seaward = 158,332 ha Community managed oyster zones: • Tanbi wetlands 6000 ha	Original estimate for Sole was based on 12nm seaward as per the artisanal fishing zone specified in the Fisheries Act of 2007. The final Sole co-management plan limited the special management area with user rights for NASCOM out to 9nm. So, total hectares for Sole are 121,245.
GOAL			
17	No. of HA in areas of biological significance showing improved biophysical conditions as a result of USG assistance. (ROECCR AO1) = Hectares under effective mgt (progress towards BRPs) for sole and oysters	No targets set but progress towards BRPs will be tracked.	

[12] Scorecard based on governance indicators in UNEP/GPA Ecosystem Based Management Guide

Results to Date and Year 5 (FY 14) Quarter 2 Results

No	Indicator	Cumulative Results LOP	LOP Target	Comments
IR 1				
2	No people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance (ROECCR 2.1.1)	1330[13]	220	
W1a	No of people with improved access to sanitation facilities	23175	23,175	See LOP footnote above. Old Jeswang, Brufut, Kamalo, Kartong. Sanyang and Tanji.
W1b	No of people with improved access to water facilities	11,663	11,663	See LOP footnote above. Old Jeswang, Brufut , Kamalo and Kartong.
W2	Number of persons receiving Participatory Hygiene and Sanitation Transformation (PHAST) Training.	240	240	40 at each of 6 WASH sites.
W3	Number of persons receiving training and outreach messages on hygiene promotion	5899[14]	6000	20 trainers trained in FY13 at each of 4 sites (Brufut, Old Jeshwang, Kartong, Kamalo). These trainers have reached 3933. Last 2 sites (Tanji, Sanyang) were trained in February and did outreach thru April at these 2 large sites (see footnote).
W4	Community water and sanitation committees established and trained with program assistance	8	6	LOP exceeded due to 2 committees at 2 of the 6 sites: Old Jeshwang and Kartong (separate committees for oyster and fish landing sites within these sites).
IR 2				
4	No of institutions with improved capacity to address NR, BD, climate change, water issues as a result of USG assistance (ROECCR 4.1.1)	19[15]	13	Previous = LACOMS in 7 communities (Gunjur, Brufut, Sanyang, Tanji, Batokunku/Tujereng, Bakau, Banjul), NASCOM, GAMFIDA, NAAFO, TRY, DoFish, NEA, Water Lab, DPWM, TAGFC. FY13 = TARUD, FY 14 = DOH under GNSSP MOU and The Gambia Food Safety and Quality Authority.
5	Number of people receiving USG supported training in natural resources management and/or biodiversity conservation. (F 4.8.1-27)	1962	1958	= TrainNet. There is duplication of individuals being trained in multiple trainings.
6	Improvements on governance scorecard	Increasing	increasing	Latest scoring was done in late September 2013.

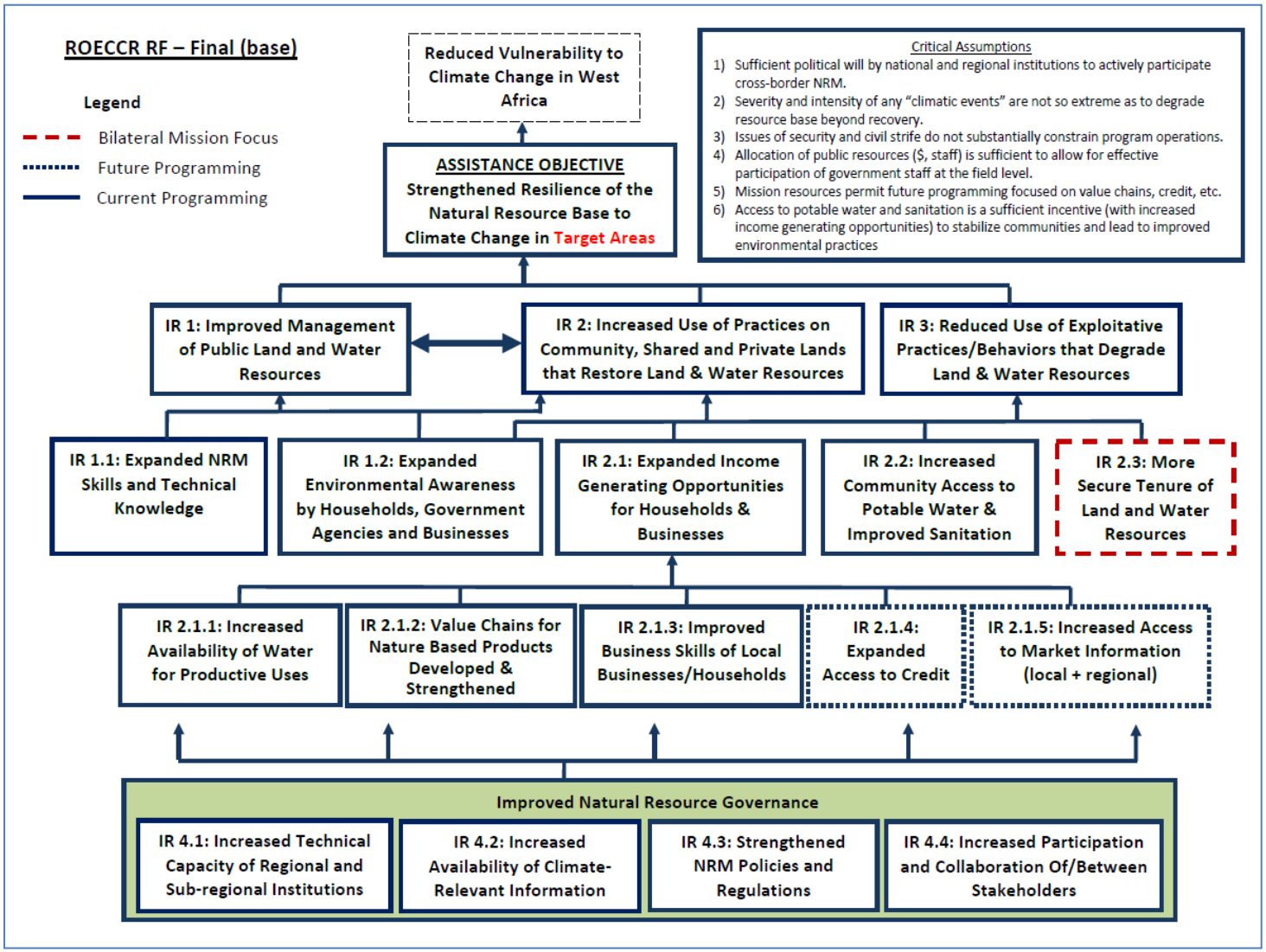
[13] The same individuals may be counted more than once if they received assistance (i.e., training) that improves their economic benefits on multiple occasions in one year or in successive years.

[14] Data from the last 2 sites was not available. 3933 people are documented as of Q2. Based on that previous documented rate of 983/site, an additional 1966 were estimated for the last 2 sites.

[15] Adjusted up from the 13 reported in the FY12 (Year 3) annual report as NEA, DPWM and Water Lab are in the "previous" group as documented by their repeated participation in various training activities documented in TraiNet.

No	Indicator	Cumulative Results (end of Project)	LOP Target	Comments
11	Number of laws, policies, strategies, plans, agreements, or regulations addressing climate change (mitigation or adaptation) and/or biodiversity conservation officially proposed, adopted, or implemented as a result of USG assistance (ROECCR 4.3.1)	4	2	FY12 = Sole and Oyster Co-Management Plans. FY14 = GNSSP MOU + Catfish/gillnet amendment to the Sole Plan. GNSSP MOU
CC1	Number of climate vulnerability assessments conducted as a result of USG assistance	1	1	
CC2	Number of stakeholders using climate information in their decision making as a result of USG assistance	44	30	See LOP comment above
CC3	Number of institutions with improved capacity to address climate change issues as a result of USG assistance	18	8	See LOP comment above
IR 3 & 4				
12	No. of Hectares in areas of biological significance under improved natural resource management (ROECCR 1.1): • Hectares covered by the fisheries management plan defined as the range of fishing fleets targeting these species • Oyster fishery estuarine and mangrove areas designated and allocated as community managed zones, including no-take areas	Sole = 121,245ha Oyster = Tanbi = 6304ha	FMP Areas: Sole = 12nm seaward = 158,332 ha Comm-unity managed oyster zones: TWNP = 6000 ha	See LOP comment above. Hectares maintained. Allahein River estuary co-management planning will still be in process. Catfish amendment to Sole Plan will not add hectares but does further improve management.
17	No. of HA in areas of biological significance showing improved biophysical conditions as a result of USG assistance. (ROECCR AO1) = Hectares under effective mgt (progress towards BRPs) for sole and oysters		No target but tracked	Reference points for sole to be established as part of the management plan. Baseline will be established based on results of preliminary stock assessment Baseline data for oysters collected in year1 PRA

Appendix B. USAID ROECCR Results Framework



Appendix C. EMMR

Environmental Status Report Factsheet

Title of the program: URI-USAID Gambia-Senegal Sustainable Fisheries Project (BaNafaa)
Implementing Partner: University of Rhode Island
Country or Region: USAID/West Africa
Award Number: LWA: EPP-A-00-04-00014-00, Associate Award: 624-A-00-09-00033-00
Program Area: Program Areas 3.1 (Health) and 4.8 (Environment)
Program Elements and Sub-Elements:
3.1 Health
3.1.8 Clean Water & Sanitation Services
4.8 Environment
4.8.1 Natural Resources & Biodiversity
4.8.2 Clean Productive Environment (Adaptation)
Life of Activity: FY2010 – FY2014
Fiscal Year of Submission: FY14 submission of ESR coving FY14 – Year 5

Funding Begin: *05/01/09*	**LOA Amount:** $3,414,566
Funding End: *04/30/14*	**FY Amount:** $433,676
ESR Prepared by: (Name/Title/Contact) Karen Kent, BaNafaa Team Leader, Coastal Resources Center, University of Rhode Island. Karen@crc.uri.edu, (401) 874-6630	**Date:** *07/31/14*
Date of Previous EMMR: 10/12/13	**Date of Most Recent IEE:** *05/15/11*

A. Status of the IEE

☒ **No revisions or modifications** of the IEE are needed.

☐ An amended IEE is submitted.

B. Status of Fulfilling Conditions in the IEE, including Mitigation and Monitoring

☒ **All mitigation measures were successful at** preventing environmental impact as specified in the original IEE**.** An Environmental Mitigation and Monitoring Report (EMMR) describing compliance measures taken are attached.

☐ **Improved mitigation measures** were adopted to better reduce environmental impacts**.** An EMMR describing these improved compliance measures taken is attached.

Approval of the Environmental Status Report (as appropriate)

AOTR/COTR _____Date:_____

MEO _____Date:_____

REA _____Date:_____

BEO _____Date:_____

Environmental Status Report Instructions and Format

In two to ten pages, the Environmental Mitigation and Monitoring Report (EMMR) should indicate whether steps need to be taken to amend previous environmental documentation and whether conditions are being met, e.g., mitigation plans are on schedule and the monitoring and evaluation measures being undertaken by the Implementing Partner.

A. Status of the IEE

Use the answers to the following questions to determine if the status of the IEE has changed. Use the same instructions for a categorical exclusion submission in the event all Implementing Partner activities were categorical exclusions.

i. Modified or New Activities

Have new activities been added or substantially modified? Has substantial new funding or time been added to the program? Note the nature of these new activities or extension and reference an updated IEE.

A modified program requires an updated IEE. Keep in mind that activities can be changed or added that do not require a program modification, but which do alter Regulation 216 threshold decisions and would thus require an updated IEE.

ii. Resolution of Deferrals

Did the previous IEE have deferrals? List these and state if they are being resolved through an updated IEE. If not, indicate when an updated IEE will be submitted in order to be able to proceed with the activities.

If the deferred activities have been removed from the awardee's program, submit an updated IEE, explain the removal and present the recommendation that the deferral is no longer applicable.

iii. Updates to the IEE

Based on the above, is an updated IEE needed?

☐ Yes (If yes, attach here.) No ☒

If the previous documentation was a categorical exclusion submission, is an updated categorical exclusion needed to deal with new categorical exclusions for new activities?

☐ Yes (If yes, attach here.) No ☒ Not Applicable ☐

B. Status of Fulfilling IEE Conditions

Implementing Partners should take this opportunity to re-evaluate the approved environmental mitigation plan to ensure the commitments made in the IEE are doable and realistic, i.e, not beyond the capabilities and resources of the Implementing Partner to implement. Mitigation and monitoring can be part of normal visits to an area to check on activities, unless specific testing, surveys or the like have been required. Alternatively, experience to date may indicate that the IEE's mitigation and monitoring plan is not sufficiently specific or is lacking in some aspect. If this is the case, the Implementing Partner should specify these challenges and the course of action to address the deficiency.

i. For each component of the program, **list or reproduce the mitigation measures** and monitoring of the IEE conditions.

ii. Describe **status of mitigation and monitoring**. Examples of the types of questions an awardee should answer to describe "status" follow:

a. What mitigation measures have been put in place? How is the successfulness of mitigation measures being determined?

b. What is being monitored and how frequently?

c. What action is being taken (as needed) based on the results of the monitoring?

Environmental Mitigation and Monitoring Report – table for activities under Categorical Exclusion

Classes of actions as per 22 CFR 216.2(c) (2)	**Actions implemented in Year 5**	**Remarks**
(i) Education, technical assistance, or training programs	• Meetings with local and bi-lateral (Senegal) stakeholders and officials (Sole & Oyster) • Training in fish stock assessments • Shellfish and Fish handling and hygiene training • Training in Water Quality Zone Mapping • WASH Training (PHAST, TOT Community Outreach) • WASH Administrative/Finance training for local partners	The core content of most of these activities revolves around sound environmental management.
(iii)Analyses, studies, academic or research workshops and meetings	***Sole Fishery*** • Catfish Longline Hook Size Study • Sole Stock Assessment • Annual Co-Management Plan Review Meeting ***Oyster Fishery*** • Annual Co-Managemnt Plan Review Meeting • Bi-weekly water quality testing reports • Biological sampling of oysters at sales points during the open season to contribute information on status of the stock.	The core content of most of these activities revolves around sound environmental management.
(xiv)Studies, projects or programs intended to develop the capability of recipient countries and organizations to engage in development planning.	• WASH M&E survey • Allahein River Estuary transboundary oyster and cockle co-management planning process.	The core content of this activity revolves around sound environmental management

Environmental Mitigation and Monitoring Report – table for activities under Negative Determination with Conditions

Planned activities	**Recommended mitigation actions**	**Status of mitigation measures/Actions taken**	**Outstanding issues on required conditions**	**Remarks**
Copy from the IEE Sole: Value chain assessment Development of a sole management plan including managing access and gear Analyses of cost competitiveness of the export processing sector Oyster: Enterprise development training – micro credit, loans and micro-enterprises Value chain assessment Establish special area community management plans (SAMPs) for oysters Fuel wood saving program Reforestation Improve small scale landing, processing and product marketing	*Copy from the IEE* Observe conditions in section 4.2 of the IEE <u>Conditions for fisheries management plans including managing access and gear</u> Fisheries management activities must be conducted in full conformity with the following points: 1. Areas for pilot fisheries management will be under an approved management plan. 2. Fisheries management plans (FMPs) will: a. Be based on the best available site-specific information on marine species and marine ecosystem status (*e.g*. key animal/plant species, marine habitats and use and ecosystem importance) and local, indigenous knowledge; b. Establish explicit, data-based management	*Mitigative measures that were put in place* <u>Management Plans:</u> Both the sole and oyster co-management plans were approved and signed by the relevant Govt. of The Gambia authorities in Jan. 2012 (Year 3). All of the conditions in points 1 – 5 have been addressed as documented in the approved plans and accompanying annexes. Draft Management Plans were shared with Robert Buzzard, Acting AOTR on June 7, 2011. Gazetting of the plans was done in nDecember 2013. Implementation of the approved Plans began in Year 3 and continued in Years 4 and 5, including continued support from USAID/BaNafaa to	*If mitigative measures were not successful or not implemented, why?* Pilot cockle aquaculture activities in Kartong, a PRA in 2012 and bi-lateral Senegal (Casamance)/Gambia meetings in 2013 and 2014 contributed to the development of a draft Allahein River estuary Shellfish co-management plan, eventually expanding the ha under management . Basket oyster culture action research was conducted in Year 3 and concluded in Year 4 using juvenile oysters that are knocked into the mud	*Any follow-up actions/recommendations to meet these environmental requirements?*

facilities and outlets	objectives for marine and coastal biodiversity conservation; c. Establish site-specific sustainable production/utilization guidelines based on growth and productivity estimates derived from the best available information; d. Demarcate and define marine resource access and use rights; e. Legally recognize management roles and responsibilities, including an agreement with local authorities to safeguard and maintain the resource base to ensure its continued productivity. Specific management roles and responsibilities will be further devolved to local communities, increasing transparency in management of the areas; f. Reflect a consultation process that allows the general public to comment and provide input on the management plan; and g. Include a monitoring plan	strengthen co-management institutions and the systems and procedures specified in the plans for environmentally sound, adaptive co-management. For example, the project supported new stock assessments for sole, in 2011, 12, 13 and 14, biological sampling of oysters at sales points, 2 gillnet studies to test hanging ratios and mesh sizes for greater selectivity of large sole (reduced juvenile and other by-catch) and a catfish longline hook size study. TRY Association's work in environmental stewardship linked to sustainable resource based livelihoods for marginalized women was recognized by award of the UNDP Equator Prize of $5000 and participation in Rio+20 in Brazil in June 2012.	and die during the normal harvesting of adult oysters. Although successful in terms of growth, the capital investment for returns was determined to not be competitive with the current conditions of wild harvest. This approach will not receive continued support from the project for replication/scale-up. If communities are motivated to continue in some form on their own, they have the knowledge to do so. The same is the case for rack culture of oysters which was the subject of action research in Year 2. Although TRY is now receiving other donor support for scale up of rack culture.	

	of select ecological parameters. (The management plan will, in effect, constitute a locally developed environmental assessment, managed under local by-laws, and endorsed by the Gambian Department of Fisheries) 3. Marine resource management activities will be implemented in accordance with criteria established in the USAID/AFR/SD publication *Environmental Guidelines for Small-Scale Activities in Africa* (Chapter 6: Fisheries – www.encapafrica.org.) 4. Production/utilization will be monitored regularly (see 2g, above). Information generated from monitoring will be used to fine-tune production/utilization guidelines as needed. This information will be shared with other partners and communities engaged in similar work to enhance NRM activities that most effectively respond to national poverty reduction strategies by improving livelihoods while conserving marine resource values (goods and services,	In Year 5 both co-management institutions conducted their 2nd annual review meetings of the plans as per the adaptive management processes defined in the plans. <u>Value chain assessments and improvements</u> Value chain assessments in Shrimp, Sole and Oysters have been conducted in previous years. The USAID/BaNafaa Project will not pursue activities in the Shrimp fishery. For Sole and Oysters, value chain assessments were conducted in the context of the development of co-management plans. For sole, the assessment contributes to The Gambian government's effort to achieve MSC Certification. This process was on-going in Year 5. German seafood company Kaufland, through a marketing		

	including biodiversity conservation, etc.). 5. Because all of the products that might be targeted for production/harvesting and trade have not been identified/selected, potential marketing activities will be reviewed for environmental impact using the Environmental Screening Form/Environmental Review Report (ESF/ERR), or some other approved process/tool. Whether using the ESF/ERR or another tool this will include measures of performance, whereby the implementing partners will assure that effective and efficient environmental practices are an integral part of the overall assistance to resource users and local private enterprises involved in resource harvesting, processing and/or transformation for marketing. Finally, fisheries management plans will be submitted to the AOTR and Regional Environmental Advisor for review prior to implementation. Specific AOTR approval of these plans is required prior to implementation. <u>Conditions for value chain</u>	campaign to support the development of sustainable seafood from The Gambia, has donated funding to The Gambia's MSC efforts through the community-based sole co-management entity NASCOM. This is a positive indication that emerging market opportunities will be closely linked to sustainable management. A comparative cost study on sole fish between The Gambia and Senegal was conducted in Year 3 to better understand the incentives for sole fished in The Gambia to be construed as originating from Senegal and processed/exported in Senegal. In Year 4 USAID/BaNafaa assistance supported further reflection on the findings by a committee mandated to develop a Cabinet Paper on the issues, including the		

	assessments and improvements Value chain improvements must be implemented as complements to fishery management plans to ensure sustainability of fish stock harvests. A formal management plan does not have to be officially adopted prior to initiating work on value chain improvements, but a process must be underway that is working towards formal adoption of such plans. To ensure value chain improvements contribute to or promote sustainable fisheries, they should aim at obtaining international certification (*e.g.* Marine Stewardship Council certification/eco-labeling) for export products. Conditions for enterprise development training – micro credit, loans and micro-enterprises Activities relating to the expansion of micro-finance and or micro-enterprises shall be subjected to environmental review. The *Ba Nafaa* project will assure that in any support for micro-lending, financial intermediaries (FIs) fully implement an environmental due diligence process which: • enables 'Environmentally	impact of potential recommended actions on sustainable management of the stock and the eco-system. The findings of this study were presented at a bilateral co-management meeting among Gambian and Senegalese fishermen in May 2012 and were discussed again at the 2nd annual bi-lateral meeting scheduled in November 2013. Project assistance for improvements in the oyster value chain has supported the process of development of a Gambian National Shellfish Sanitation Plan for the Tanbi. This approach focusses on inter-agency cooperation to monitor and manage water quality and environmental hazards as a means to improve the health and quality of the oyster stock and as the basis for market		

	Sensitive Activities' , as defined below, to be identified in loan applications; • bars funding to activities which are prohibited under the Sections 118 & 119 of the Foreign Assistance Act; • bars funding for "classes of action normally having a significant effect on the environment (per 22 CFR 216.2.d) pending an Environmental Assessment acceptable to USAID and USAID's approval of that assessment; and • ascertains compliance with Gambian and Senegalese environmental statutes/regulations as a condition for loan-making. However, if one or more of the participating FIs have environmental due diligence procedures that depart in some measure from these requirements, project staff will consult the REA for a determination whether the existing procedures substantially satisfy the intent of this condition and are acceptable. *Environmentally Sensitive Activities* are defined as: a. Activities listed in 22 CFR 216.2.d "Classes of actions normally	opportunity. Bi-weekly water quality testing at 19 sites and bi-annual shoreline sanitation surveys are continuing. <u>Enterprise development training – micro credit, loans and micro-enterprises</u> The micro-finance activities conducted under the BaNafaa project were initiated by the TRY Oyster Association in order to build savings and financial management capacity among its members in the context of the Oyster Co-Management Plan for which TRY now has co-management responsibility. Under the co-management plan, environmentally favorable harvesting and management practices are specified and institutionalized. Loans are for a small, fixed amount and not granted based on specifically		

	having a significant effect on the environment"; b. Activities prohibited or limited by Sections 118 and 119 of the Foreign Assistance Act; or c. Activities identified by host country environmental regulations as requiring environmental review, licensing or permits. (for a list of activities under a & b, see the ENCAP factsheet on environmental compliance for DCA activities: www.encapafrica.org/documents/ENCAP_AFR_DCA_Factsheet_3Feb2010.doc) If the project undertakes other activities to enhance availability of credit and financial services, it shall assure that where appropriate, environmental due diligence procedures (see above) are either (i) implemented (where USAID has direct control over provision of credit and financial services); or (ii) promoted and advanced to the degree feasible (where USAID does not have direct control). In cases where *Ba Nafaa* has direct control over the provision of credit and financial services, the project will ensure that the Environmental	identified individual activities. USAID does not have direct control over the provision of these loans and financial services. This program is not expanding in Year 4, but working to complete active loan cycles.		

Sub-grants:	Screening Form (ESF) in the *Environmental Guidelines for Small-Scale Activities in Africa (EGSSAA) Part III, "Guidelines for Micro and Small enterprises"* (tailored as needed) will be used to assist in identifying potential environmental impacts that are likely to occur as a result of such micro-enterprise activities. When screening identifies moderate and high risk categories, mitigation measures will be described using Environmental Review Reports (ERRs). In addition, the URI-appointed Project Manager for *Ba Nafaa* will visit all projects for which ERRs exist to ensure they are not causing any adverse environmental impacts, with a view to correcting and or initiating additional mitigation measures as needed. <u>Conditions for small-scale infrastructure</u> For the rehabilitation of existing facilities, and for construction of facilities in which the total surface area disturbed is less than 10,000 square feet (1,000 sq meters), and where no protected or other sensitive environmental areas could be affected, the condition is that these activities will be conducted following			

	principles for environmentally sound construction as provided in the Chapter 3: Small Scale Construction of EGSSAA http://www.encapafrica.org/EGSSAA/Word_English/construction.doc. For the construction of any facilities in which the total surface area disturbed exceeds 10,000 square feet (1,000 square meters), the program shall conduct a supplemental environmental review according to guidance in Annex G (www.encapafrica.org/EPTM/Annex G EPTM_Mar2005b.pdf) of the Africa Bureau Environmental Procedures Training Manual (EPTM) (http://www.encapafrica.org/eptm.htm). Construction will not begin until such a review is completed and approved by the Mission Environmental Officer or REA. <u>Conditions for sub-grants</u>: Any sub-grants to support this project's activities must incorporate provisions that the activities to be undertaken will comply with the environmental determinations and recommendations of this IEE. This includes assurance that the activities conducted with USAID funds fit	<u>Sub-grants</u>: Small seed-grants to TRY Association were provided in Years 3 and Year 4. All activities in the grants were already considered in this IEE and included exchange visits to Senegal to visit processing centers, contribution to design plans for a training /processing center < 1000sq. m, Mangrove reforestation, wood saving oyster smoking oven		

Water & Sanitation: Water and sanitation planning Test, pilot and conduct research on low-cost, small-scale technologies for water supply or sanitation service provision Construct or renovate boreholes Install mechanized or manual pump systems Construct or renovate hand dug wells Construct or renovate connections to extensions of networked water supply distribution systems, including installation of tap stands Construct or rehabilitate water storage tanks Construct rainwater harvesting systems Construct or renovate sanitation facilities (latrines or other) Construct or renovate	within those described in the approved IEE or IEE amendment and that any mitigating measures required for those activities be followed. In addition, environmental screening will be required. The AFR Environmental Review Form and process, including supplemental NRM checklist, will be used for all *Ba Nafaa* small grants made after the effective date of this IEE. The form is available at www.encapafrica.org/documents/AFR-EnvReviewForm-20Dec2010.doc. <u>Conditions for WASH</u> • All water supply and sanitation activities will	demonstration model installed at one oyster processing site. Mitigation measures, such as use of USAID guidelines Chapter 3: Small Scale Construction of EGSSAA, have been implemented. A small seed-grant to NASCOM at the end of Year 3 iwas implemented in Year 4. It was primarily institutional capacity building, except a pilot study of buoy types to determine appropriate methods for demarcating the 1 nautical mile seasonal closure for sole specified in the co-management plan. 42 spar buoys were deployed in May – June 2013. <u>Water & Sanitation</u> Add-on funding was received at end of Year 2. Needs Assessment of 16 fish/oyster landing sites conducted in Year 3. Six priority intervention sites		

hand washing stations Improved solid waste handling Operate small-scale water supply and sanitation systems, including maintenance of pumps, pipes and other infrastructure		be conducted in a manner consistent with the good design and implementation practices described in *EGSSAA* *Chapter 16: Water Supply and Sanitation*. • All construction activities will be conducted following principles for environmentally sound construction, as provided in *EGSSAA* *Chapter 3: Small Scale Construction* • Aquifer protection measures and proper design and maintenance will be undertaken to minimize microbiological contamination of improved wells and springs. • Water quality testing is the responsibility of the *Ba Nafaa* project for interventions that provide potable water. This includes arsenic testing adhering to "Guidance Cable State 98 108651". In addition, the standards and testing procedures described in "*Guidelines*	selected. Environmental impact was considered in the needs assessment and site selection, including vulnerability of the sites to sea level rise and other impacts due to climate change. Staff and implementing partners with significant experience in environmental compliance have been put in place to implement these activities and Environmental Compliance language, copies of the IEE and screening tools have been included in their contracts. The USAID/BaNafaa WASH Coordinator completed USAID Environmental Compliance Training in Accra in March 2012 and has presented what he learned and shared materials with implementing partners. Principal activities in Years 3 & 4were: Facilities design, including environmental		This add-on has not been funded

		for Determining the Arsenic Content of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa" must be followed. The project will also build capacities and responsibilities that provide reasonable assurance that on-going water quality monitoring occurs. • The standards for initial and on-going testing will follow local laws, regulations and policies. Furthermore, a response protocol will be established in the event that water quality testing detects contamination. • Latrines will be sited far away from shallow wells, cisterns, spring sources, boreholes and wetlands. Latrine pits will be dug in the unsaturated zone above the water table, and latrine pits will be protected against flooding and overflow due to intense rainfall. *Ba Nafaa*	screening of the six selected sites and an EMMP for construction activities; PHAST training, TOT in community outreach on hygiene promotion and training in fish handling and hygiene; Establishment and orientation of site level WASH management committees, who developed by-laws, a management plan and an EMMP for their site. Construction at 6 sites is now complete. These design/planning and construction activities were done in accordance with the specified conditions and recommended mitigation actions for WASH specified in this IEE. Three of the 4 sites where the project will provide potable water points are sourced through connection to the		and proposed add-on activities are not being implemented.

Global Climate Change Planning & Adaptation: Adaptation planning and implementation Climate change adaptation measures such as coastal development setbacks and building standards Small-scale agricultural activities Beach and dune nourishment Structural shoreline stabilization		will establish and train community water and sanitation (WAT/SAN) committees to manage, repair and maintain all water points. Also, general concepts of watershed management will be explained to WAT/SAN committees. • *Ba Nafaa* will provide training and education in sanitation and hygiene to local water and sanitation committees and to participating communities with the aims of : o Ensuring community mobilization and public awareness of human health risks associated with water-borne disease vectors; o Encouraging the development of community responses that are environmentally sound, cost effective and safe; and o Ensuring control over the management of the facilities and operations through local community	municipal system. One is protected well with solar powered pump. 2 sites will have sanitation facilities only provided by the project. Initial Arsenic and other required testing has been conducted in Year 4 for both municipal and borehole sources and all sources meet standards.		

	rules and best practices. Verification through site visits and photos will be done to assure practices are in accordance with local community rules and best practices. • *Ba Nafaa* will: o Follow best engineering practices with qualified professional expertise including energy and water efficiencies; o Identify and mitigate any direct impacts on the existing physical environment or surrounding socio-economic environment caused by the construction of and presence of the water or sanitation system. These impacts relate to resource use, earthmoving and construction, soil compaction and impacts on neighboring populations. • When feasible, the majority of materials used will be of local origin and will not contain any hazardous materials (*e.g.* asbestos or lead) <u>Conditions for Climate Change adaptation measures</u>	<u>Climate Change</u> Add-on funding received at end of Year 2. Bi-lateral Climate Change Vulnerability Assessment conducted in Year 3. Stakeholder workshop and adaptation planning resulting in submission of a Bilateral Climate Change Adaptation Add-On request submitted to USAID/WA in July 2012. The request was not acted on.		

	Beach and dune nourishment, use of hard structures to combat erosion from sea level rise Use of hard structures or beach or dune nourishment to combat sea level rise will not be approved without additional screening prior to implementation. Institutions proposing hard structures and beach nourishment should be encouraged to identify alternative options including 'soft' engineering solutions including abandonment of built structures that are at risk or retreat/movement landward of those that can be moved. Soft solutions, which include restoration of natural vegetation for erosion control and promotion of green coastal barriers to combat erosion or stabilize beaches, are allowed without further screening. *Small-scale agricultural activities that promote and carry out sustainable agriculture activities including tilling, cultivation, fertilization, harvesting, etc.* All agricultural activities will be conducted according to the following principles: **(a)** emphasize and fully integrate			

	environmentally sound practices substantially consistent with *ESGGAA Chapter 1: Small Scale Agriculture; Chapter 11: Livestock; and Chapter 12: Integrated Pest Management* (www.encapafrica.org/egssaa.htm) and the Africa Bureau Fertilizer Factsheet http://www.encapafrica.org/docs.htm#specificagriculture). This shall be an ongoing effort, and it is expected that *Ba Nafaa* guidelines and practices will be refined over time in response to field monitoring. "Environmentally Sound Practices" include basic good hygiene/animal waste management/biosafety practices as a part of animal husbandry TA/training (if applicable), and cleaner production approaches, as appropriate, for agro-processing. If direct assistance to specific processing operations is undertaken, the project must ensure that the operations employ (or will employ, as a result of the assistance) adequate environmental management techniques. These techniques must, at a minimum, satisfy obligations under			

	local law or policy. Where no such requirements exist, the enterprise must employ appropriate, common-sense practices to safely dispose of waste, minimize pollution of surface or groundwater and safely store inputs and commodities. **(b)** include the fundamentals of pesticide safer use if it becomes apparent that beneficiaries are using pesticides in the agricultural production activities enabled by project-funded inputs, training or extension. If such use is observed, the project must take all feasible steps to discourage the use of Class I and Class II pesticides by beneficiaries. *Refer to Section 5.1: General restrictions-pesticides.* **(c)** promote intensification of agriculture, while undertaking all feasible measures to discourage the expansion of beneficiary agricultural production into non-degraded habitat or important ecological areas (*e.g.*, mangroves, undisturbed wetlands, primary forest, *etc*.). If such expansion is observed, the project shall immediately notify the AOTR and REA.			

Appendix D. Acronyms

CRC	Coastal Resources Center of the University of Rhode Island
EMMP	Environmental Mitigation and Monitoring Plan
EMMR	Environmental Mitigation and Monitoring Report
GAMFIDA	Gambian Fisheries Development Agency
GAMWORKS	Gambian Public Works Agency
GEF	Global Environment Facility
GNSSP	Gambian National Shellfish Sanitation Plan
LEK	Local Ecological Knowledge
LOP	Life of Project
MoFWR	Ministry of Fisheries and Water Resources
MSC	Marine Stewardship Council
NAAFO	National Association of Artisanal Fisheries Operators
NASCOM	National Sole Fishery Co-Management Committee
PHAST	Participatory Hygiene and Sanitation Transformation
PRA	Participatory Rural Appraisal
ROECCR	Regional Office of Environment & Climate Change Resilience, USAID/West Africa
TAGFC	The Association of Gambian Fisheries Companies
TARUD	Trust Agency for Rural Development
TRY	TRY Oyster Women's Association
TWNP	Tanbi Wetlands National Park
WASH	Water, Sanitation and Hygiene
WWF	World Wide Fund for Nature