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## SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP)



### Final Report, 2014 -2021

THE UNIVERSITY OF RHODE ISLAND GRADUATE SCHOOL OF OCEANOGRAPHY



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**Cover photos (Credit):** A women drying fish on an elevated rack, a better practice than drying on the ground. (SFMP)

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## ACRONYMS

ACECoR	African Center of Excellence in Coastal Resilience
AOR	Administrative Officer Representative
CEWEFIA	Central and Western Region Fishmongers Improvement Association
CIC	Canoe Identification Card
CLaT	Child Labor and Trafficking
COVID-19	Coronavirus Disease 2019
CRC	Coastal Resources Center
CSIR	Council for Scientific and Industrial Research
CSO	Civil Society Organization
DAA	Development Action Association
DFAS	Department of Fisheries and Aquatic Sciences
DOPA	Densu Oyster Pickers Association
EU	European Union
F2F	Fisher-to-Fisher
FAO	Food and Agricultural Organization of the United Nations
FC	Fisheries Commission
FDA	Food and Drugs Authority
FEU	Fisheries Enforcement Unit
FMOC	Fisheries Management Operational Committee
FON	Friends of the Nation
FSSD	Fisheries Statistical Survey Division
FTT	FAO Thiaroye Processing Technique
FWV	Fisheries Watch Volunteers
GCAA	Ghana Civil Aviation Authority
GHS	Ghana Cedis
GIFA	Ghana Inshore Fishermen's Association
GITA	Ghana Industrial Trawlers Association
GIS	Geographic Information System
GNCFC	Ghana National Canoe Fishermen's Council
GOG	Government of Ghana
GPS	Geographic Positioning System
HFIAS	Household Food Insecurity and Access Score
HM	Hen Mpoano
ICFG	USAID/Ghana's Integrated Coastal and Fisheries Governance Project
ICM	Integrated Coastal Management
IEC	Information, Education and Communication
IR	Intermediate Results
IUU	Illegal, Unreported and Unregulated
LABEC	Landing Beach Enforcement Committee

LEAP	Livelihood Empowerment Against Poverty
LUSPA	Land Use and Planning Authority
MASLOC	Microfinance and Small Loans Center
MDDS-W	Minimum Dietary Diversity for Women Score
MOFAD	Ministry of Fisheries and Aquaculture Development
MOGCSP	Ministry of Gender, Children and Social Protection
MOH	Ministry of Health
MOI	Ministry of Information
MPU	Marine Police Unit
MSMEs	Micro, Small, and Medium-scale Enterprises
MTDP	Medium Term Development Plan
NAFAG	National Fisheries Association of Ghana
NAFPTA	National Fish Processors and Traders Association
NGO	Non-Governmental Organization
NMFMP	National Marine Fisheries Management Plan
NTS	National Targeting System
OCA	Organizational Capacity Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PPI	Poverty Probability Index
RAMSAR	Ramsar Convention on Wetlands of International Importance
SBBC	Social and Behavior Change Communications
SFMP	Sustainable Fisheries Management Program
SNV	Netherlands Development Organization
STEP	Sustainable, Transparent, Effective Partnerships methodology
STWG	Scientific and Technical Working Group
UAV	Unmanned Aerial Vehicle
UCC	University of Cape Coast
URI	University of Rhode Island
USAID	United States Agency for International Development
VSLAs	Village Savings and Loans Associations
VMS	Vessel Monitoring System
WARFP	West Africa Regional Fisheries Program
WHO	World Health Organization

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# EXECUTIVE SUMMARY

## Project Background

The USAID Ghana Sustainable Fisheries Management Project (SFMP) purpose was to, ***“Rebuild targeted fish stocks through adoption of sustainable practices and exploitation levels.”*** It was designed to address the declining marine fish stocks in Ghana that was resulting in declining catches of small pelagic species of sardines and anchovies that make up the bulk of fish landings in Ghana and represent a locally produced, low-cost and nutritious animal protein supply. This was also resulting in declining economic conditions for the more than 130,000 men and women who rely directly on the fishery for their livelihoods. Causes of the decline are attributed to vessel overcapacity of the artisanal and industrial trawl fishing fleets resulting in overfishing. The problem is exacerbated by weak management capacity, rampant Illegal, Unreported and Unregulated (IUU) fishing activities and the provision of input subsidies especially in the artisanal sector.

The SFMP duration was October 2014 to April 2021. The project was provided an 11 month no-cost extension in 2019, and a cost extension in 2020 for an additional 7 months to address the COVID-19 pandemic. The purpose of the cost extension was to, ***“Prevent the spread and mitigate the economic effects of COVID-19 among vulnerable households in fishing communities in Ghana.”*** The project was implemented by the University of Rhode Island’s (URI) Coastal Resources Center as lead, with a number of local and international implementing partners. The total USAID contribution to the project was approximately \$US 26 million with additional cost share of approximately US\$ 9.6 million provided by URI and other partners.

The SFMP main government counterpart was the Ministry of Fisheries and Aquaculture Development and its Fisheries Commission with intended beneficiaries being the men and women in the artisanal canoe fishery who rely on the fishery as their main livelihood, in addition to a number of fisherfolks associations, local NGOs and the University of Cape Coast’s Centre for Coastal Management. The project worked in the coastal districts of the four coastal regions stretching from the border with Togo to Cote d’Ivoire.

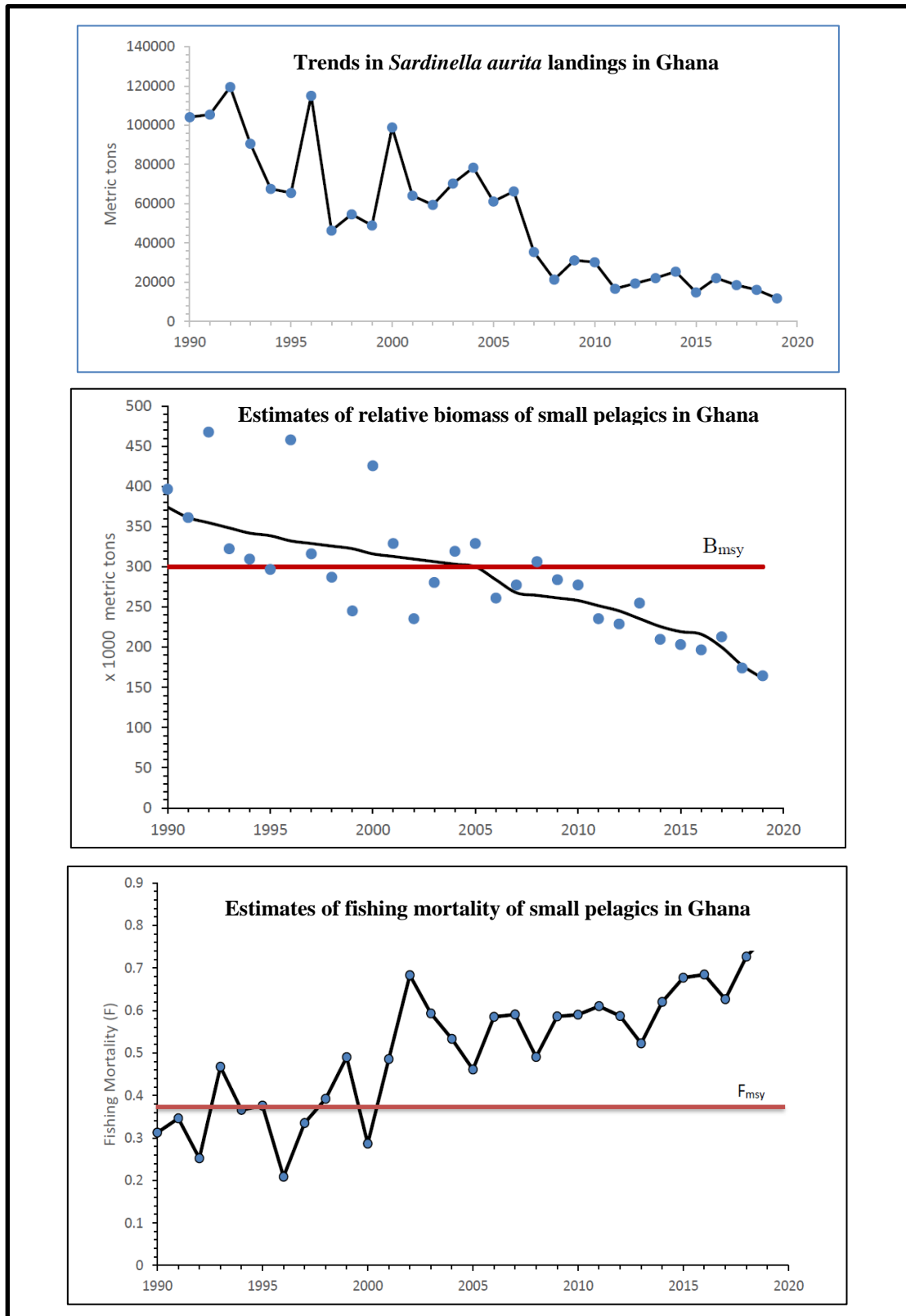
The project theory of change posited that if legal and policy enabling conditions improved, and if improved science was applied in management decision making, and if constituencies of stakeholders were built in support of management actions, and if sufficient actions were effectively implemented, then the marine fish stocks would recover. The project also viewed improvements in the post-harvest value chain as contributing to the project purpose, along with cross cutting objectives on gender, public-private partnerships and local capacity building. The project also included a component to address child labor and trafficking in the fisheries sector.

## Project Accomplishments

Over six and a half years, the project met or exceeded almost all of its result area indicators as documented in Annex A of this report. Highlights of the major accomplishments of the project are provided in Table 1 below that show considerable progress and change on Ghana’s journey towards fisheries recovery and its sustained management.

While the project has provided a stronger foundation for sustainable management and stock recovery than existed at the beginning of the project, the project purpose was not achieved. This is evidenced by stock assessment reports produced by the project in collaboration with local academics and the Fisheries Commission’s Fisheries Scientific Survey Division that showed a continuing downward trend in the biomass of the small pelagic fish stocks and a continuing trend of increasing fishing pressure (see the final report: [Status of the Small Pelagic Stocks in Ghana in 2019](#)) (see Figure 1 below). These trends have not changed over the last

two decades and illustrate the enormous challenges for fisheries recovery of artisanal fisheries in low and middle income countries.



**Figure 1: Trends in the status of the small pelagic fisheries in Ghana**

**Table 1. Highlights of Changes Attributed to the USAID Ghana Sustainable Fisheries Management Project.**

Start of the Project	End of the Project
No marine fisheries management plans.	A national fisheries management plan adopted and key provisions implemented (e.g., closed season, canoe registration). Community-based estuarine management plans approved and implemented. 622,714 hectares of biologically significant areas under improved natural resources management and under improved management practices or technologies with USG assistance (EG.10.2-2 and EG.3.2-25).
No closed seasons, compliance with most top-down regulations low.	Closed seasons implemented for all fleets including canoe sector for the first time, and for selected estuaries with new closures declared for 2021. 108,856 individuals in the agriculture system who have applied improved management practices or technologies with USG assistance (EG.3.2-24).
Open access fishing regime.	Foundation for managed access in place due to canoe registration and database management system, to be operationalized once the moratorium agreed to by the Canoe fishermen is formally instituted by the Fisheries Commission.
No use rights in fisheries.	Exclusive use rights granted to community fisheries associations in 3 estuaries including a women's oyster harvester association.
No co-management policy.	National policy framework adopted that sets the stage for greater participatory decision-making, including men and women stakeholders in the fishery, through formal co-management institutions.
Little stakeholder involvement in policy formulation and regulatory management decision – mainly top-down.	Fisher-to-Fisher dialogues used as an official means to ensure ongoing communications between and among fishers and the Fisheries Commission which can be formalized in co-management institutions via the co-management policy.
Stock assessments conducted every few years by international groups.	Annual stock assessments produced by local scientists and used for management decision making (e.g., closed season). Fisherfolk actively engaged in applied research and assessing scientific findings for management implications.
Inefficient and unhealthy fish smoking technology extensively used coast-wide. No set of specific quality standards for fishery products.	Development of a cost effective low PAH low energy improved smoker technology (the Ahotor smoker) adopted by over 700 fish processors. 6 stove companies employing 19 artisans and 15 independent artisans constructing ovens in the country. A Class I certification scheme to promote more healthy fish products in local markets established and administered by the Post-Harvest Unit of the Fisheries Commission. Two model fish processing and training centers established and managed by women processor associations.
Few programs supporting diversified livelihoods or business development for fisherfolks or addressing lack of access to finance for business development.	MiLife micro-insurance designed for fisherfolks reaches over 4,000 fisherfolks. 6,062 fisheries related micro, small and medium enterprises (MSMEs) received business development services. \$92,876 of agriculture-related financing accessed as a result of USG assistance, (EG.3.2-27). 56 micro savings entities (Village Savings and Loan Associations) were set up for over 1174 beneficiaries (EG 4.2-7).
During the COVID pandemic – few operational handwashing stations at fishing landing sites & few communications campaigns tailored to fisherfolk needs.	An extensive communications campaign implemented on TV, social media, music video, radio and on the ground in fishing communities tailored to fisherfolks, reaching communities in all coastal districts. Handwashing stations provided to 242 fish landing sites.
No mechanism tailored for the provision of social safety for artisanal fisherfolk.	Workable models for providing cash benefits and diversified livelihoods to vulnerable fishing households demonstrated and available for scale-up. 1,905 poor vulnerable fishing households coast-wide provided a total cash benefit of \$208 over a 4-month period during the pandemic.

There are several reasons why the fish stocks have not recovered. First, the fishery remains open access which inevitably leads to overfishing and further hastened by generous input subsidies, especially the pre-mix fuel subsidy provided to the artisanal fleet at an estimated cost to government of US \$45 million per year. This situation is on the cusp of change due to SFMP and World Bank support provided to the Fisheries Commission to create a canoe vessel registry and tacit agreement by the Ghana National Canoe Fishermen's Council to a moratorium on further entrants. This agreement, while not yet formalized by the Fisheries Commission with a moratorium declaration, was agreed to through numerous Fisher-to-Fisher dialogues that were supported by the project. Subsequent to a moratorium will be the need to negotiate a canoe vessel reduction plan to match fishing capacity more closely to the limit needed for sustainable fishing and improved profitability in the sector.

Secondly, stock recovery is unlikely be achieved until a greater number of fisheries management measures are effectively implemented. While many are contained in the National Marine Fisheries Management Plan and in the fisheries laws, few are implemented fully by the Fisheries Commission or are effectively complied with by the fishers. SFMP made a major contribution to implementing effective management measures with the implementation of canoe sector closed seasons. Scientific recommendations provided by the Science and Technical Working Group, as well as SFMP supported stakeholder dialogues and negotiations that created the political will within MOFAD and the Fisheries Commission to declare closed seasons for the trawl, semi-industrial and canoe sectors. The most difficult negotiation was a first ever closure of the canoe fishery, first declared for 2018, then rescinded, then declared again and implemented in 2019 with a high degree of compliance, postponed due to the COVID-19 pandemic in 2020, and reinstated again post project for July of 2021. While closed seasons protect spawners from capture during the breeding season, a global best practice, seasonal closures may be needed for longer than the two-month trawl and semi-industrial closure or the one-month canoe closure. The current closures with high fishing industry compliance are a good beginning, are becoming an annual norm, and represent a great leap forward for regulatory management of the fishery.

Thirdly, SFMP provided support for scientific recommendations on the timing of the closed season. The recommendations were not followed for the 2019 closure by MOFAD, but the closure is more appropriately timed for 2021 due to pressure from local scientists and stakeholder associations that are now well aware of the basis for proper timing. SFMP contributed to the groundswell of support from constituents for proper timing through its communications campaigns and involvement of fisherfolks in data collection and analysis of the biological impacts of the first canoe closed season and their representation on the SFMP supported Science and Technical Working Group.

Fourthly, top-down decisions do not work. The 2019 closed season saw near perfect compliance by all fleets and was one of the rare occasions where a regulation had widespread support and compliance. Other regulations that have been imposed in a top-down manner in the past remain problematic due to high levels of non-compliance. Illegal, Unreported and Unregulated (IUU) fishing activities which are prevalent within the sector prevent fishery recovery and these include; use of fine mesh nets, use of light, and the phenomenon referred to as "saiko", the transshipment of trawler by-catch that consists mainly of juvenile species of fish. These problems are well documented and known by stakeholders and policy makers alike. To address the problem of illegal fishing, SFMP improved capacities of the marine police and members of the Fisheries Enforcement Unit, worked with enforcement, personnel, judges and prosecutors to improve the efficiency of the prosecutorial chain (level of convictions and sanctions of those arrested), provided material support in the form of several vehicles to improve shore-based patrolling, piloted a fisheries citizen watch program and conducted an

extensive communications campaign on illegal fishing. However, no measurable changes in improved compliance have been seen except some evidence for fewer trawler incursions into the inshore exclusion zone attributed to the VMS system provided to the Fisheries Enforcement Unit through the World Bank supported West African Regional Fisheries Program (WARFP). Unless illegal fishing is substantially reduced, full fishery recovery is unlikely.

Finally, political interference harms rather than helps the sector in the long term. This is a critical challenge still facing the industry. Most fisheries industry experts in Ghana now believe that weakness along the enforcement and prosecution chain leading to non-compliance with fisheries management measures is mainly a problem of the interactions between the sector and the political economy referred to as “political interference”, rather than lack of enforcement capacity or fisherfolk’s understanding of the fisheries management measures.

While political interference may be intractable for a project to change, especially with regard to the Saiko fishing and its Chinese interests, this problem can be mitigated and possibly reduced by stronger constituencies supporting regulatory reforms. SFMP made significant contributions towards building stronger constituencies. Most successful was the series of Fisher-to-Fisher dialogues that provided a frequent forum for fisherfolks, both men and women, to discuss issues of concern and find consensus for support of actions, most notably, the artisanal closed fishing season and for a moratorium to prevent new entrants (additional canoes) into the fishery. Communications campaigns by SFMP on IUU fishing, the national marine fisheries management plan, child labor and trafficking and improved post-harvest technologies increased knowledge concerning the laws and regulations, and rationale for actions.

For more long-term sustainability, SFMP worked to strengthen the policy and legal enabling environment for more participatory governance of Ghana’s fisheries. SFMP supported development of the fisheries co-management policy framework approved in 2020 which provides a road map for creating permanent institutional arrangements for fisherfolk participation in decision-making, providing for representation of all sub-sectors, guaranteeing representation of women on co-management committees, and allowing for use rights to be granted. The Fisheries Commission and fisherfolk associations are now poised to transform the Fisher-to-Fisher dialogues and the ad hoc project-supported Science and Technical Working Group that modeled good co-management practices into formalized co-management institutions as outlined in the national policy.

The delegation of management responsibilities to local stakeholders including resource users in the form of community-based management has already been implemented in three estuaries – the Densu, Pra and Ankobra - facilitated by SFMP. These pilots have demonstrated the effectiveness of fisherfolk-led management, supported by government and other institutions – local NGOs and academia. Most notable in this regard is significant empowerment of fisherfolks through the first ever granting of use rights to local fisherfolk associations, including the women-led and predominately female based membership of the Densu Oyster Pickers Association. Secondly, these associations established closed seasons for their fisheries and served as a successful model that was eventually scaled to the larger marine sector. As a result of SFMP support for applied management actions a total of 622,714 hectares of estuarine and marine biologically significant areas are under improved natural resource management and 108,856 producers are applying improved management practices.

SFMP made significant investments in building the capacity of 19 local institutions in government (8), academia (2), local NGOs (2), regional associations (3) and national fisherfolks associations (4) for men and women. This included building human resource capacity in leadership, fisheries management and building scientific capacities in the Fisheries

Scientific Survey Division of the Fisheries Commission and at the University of Cape Coast's Centre for Coastal Management and the Department of Fisheries and Aquatic Resources. These institutions are much better equipped to integrate science-based information into decision making, more capable to participate in decision making processes as well as implement grants from donors that support sustainable fisheries initiatives. Four national resource user associations were provided capacity building support starting in mid-project. The two most directly representing artisanal fisherfolk – The National Fish Processors and Traders Association, and the Ghana National Canoe Fishermen's Council - have made the least progress in building their capacities. This remains a priority for further institutional strengthening. All participating organizations acknowledge that SFMP facilitated a transformation in their attitudes about their own and others' institutional roles in the sector and the participatory, evidence-based approaches they can apply to work more effectively together as stakeholder institutions in the fisheries sector.

SFMP made significant improvements in post-harvest processing and handling practices in the artisanal sector. Working with the Post-Harvest Unit of the Fisheries Commission, Ghana Standards Authority and the Food and Drugs Authority, a Class 1 certification scheme was developed that certifies artisanal fish smoking kitchens as meeting a minimal set of quality standards. There are 28 certified fish processing facilities as of January 2021 providing greater flows of quality and safe fish products into the local food supply chain and which can enable access to more upscale markets in urban settings for those processors that are certified.

The certification scheme requires the use of the "*Ahotor*" smoker, which was developed by the project. This smoker is more fuel efficient and produces products with lower PAH levels, a known carcinogen. It is more costly than the "*chorkor*" smoker which is the most widely used fish smoker in Ghana today which impedes processor uptake but shows over the long term better rates of return on investment due to lower operating costs than the *chorkor* smoker. There are over 700 *Ahotor* smokers in use along the coast and the number is growing as it is increasingly promoted by the Fisheries Commission and others.

At the start of the project, SFMP was promoting the "*Morrison*" smoker that was already shown to be a more fuel efficient and cost effective alternative to the *chorkor* smoker. However, after testing of *Morrison* and *chorkor* fish products, the *Morrison* product had higher PAH levels and both exceeded EU standards. Therefore, the project immediately discontinued promotion of the *Morrison* design. This delayed the initial goal to significantly scale up more profitable and fuel efficient smokers and led to development of the *Ahotor* design. It was not until Year 3 of the project that this proven technology, developed in cooperation with artisan fish smokers and the Ghana Standards Authority, was ready for widescale roll out.

SFMP built a supply chain of 56 trained artisans who could construct the *Ahotor* smoker along the entire coastline. There are now 6 stove companies employing 19 artisans and 15 independent artisans who are currently constructing ovens in the country.

The *Ahotor* is more complicated to build so requires well trained artisans for proper construction. This is part of the added cost for the smoker, but due to low fuel wood consumption it has a good internal rate of return and improves profitability once the capital construction costs are paid off. SFMP promoted a market based approach for adoption and scale up and initially attempted to use rural bank and microfinancing institutions as the vehicle for financing *Ahotor* construction for fish processors. However, reluctance to loan to the fisheries sector and high interest rates made this difficult for most small scale processors. In the end, SFMP and the Fisheries Commission concluded that subsidies for the *Ahotor* in the early phases of scale-up are needed until the technology is in more widespread use coast-wide.

While the Class 1 certification and the *Ahotor* smoker will be lasting legacies of the project, SFMP also invested heavily in training fish processors and traders in improved fish handling and packaging as well as in business skills development. SFMP trained 1,195 persons (120 men, 1,075 women) in hygienic fish handling practices that reduce microbial contamination during processing. A total of 6,062 fisheries related micro, small and medium enterprises (MSMEs) received business development services supported by the project. In order to sustain these training initiatives, SFMP built two model fish processing and training centers and developed the capacity of the processor associations who managed the facilities – Development Action Association in Greater Accra, and the Central and Western Region Fishmongers Improvement Association in the Central Region. These centers continue to train women and produce improved fisheries products by association members for sale in Ghana.

Lack of financing was identified early in the project as a critical constraint for fish processors and traders to grow and expand their businesses. Initial attempts to convince rural banks and other lenders to provide financing for fish processors and traders were unsuccessful. SFMP therefore, changed its approach and supported the establishment of Village Savings and Loans Associations and cooperated with MASLOC, the government sponsored microfinance program with discounted interest rates, to provide financing mechanisms for these women businesses. As a result of SFMP assistance, a total of 56 micro savings entities (Village Savings and Loan Associations) were set up, and 1,174 beneficiaries (1,103 female) participated in these group-based savings, micro-finance or lending programs. As of November 2020, these groups had saved \$51,496 and originated loans to the tune of \$16,136. A total of US\$ 92,876 in financing from MASLOC was accessed, benefiting 492 fish processing businesses.

SFMP also supported a public-private partnership with Millennium Insurance, UT Life Insurance (now Milife), Vodafone, and BIMA to launch the Fishers Future Plan (FFP) as a fisherfolk resilience building measure. The FFP was designed with fisherfolk and other stakeholder inputs and is an affordable life insurance package for fisherfolk, coupled with a mobile money platform for premium payments and receipt of claims. The package is tailored to the needs of Ghana's fisherfolk, allowing savings for retirement, future consumption and partial withdrawal during lean fishing seasons or fisheries closures. By December 2018, the FFP was active in 5 communities and had 4,060 customers who had provided premium contributions worth about \$50,000. Moreover, the FFP received over \$430,000 in direct and in-kind partnership investment. MiLife has recently indicated their interest in redesigning the program to be more applicable beyond just fishing communities.

SFMP integrated gender mainstreaming throughout its activities. SFMP worked with the MOFAD and the Fisheries Commission to develop a gender mainstreaming strategy for the fisheries sector that acknowledges the important roles women play in fish processing, trading, canoe ownership and financing of fishing trips among others. SFMP's livelihood activities focused on women processors and traders as evidenced by the high percentages of women participating in SFMP supported business development and access to micro-finance services. In addition, SFMP worked to raise the profile of women and support their full integration into fisheries management decisions. The fisheries co-management policy mandates their inclusion in co-management committees and the Densu estuary community-based management model demonstrates the ability of women shellfish harvesters to effectively manage fisheries resources. SFMP supported training of 1,018 women leaders from three fisheries associations on leadership and advocacy skills to enable women to negotiate and advocate on issues in their communities and about fisheries management. Of the more than 10,463 persons the project trained on natural resource management, 43% were women. There were 21 highly vulnerable female headed households particularly prone to offering their children for labor on fishing

vessels were identified and supported with single unit *Ahotor* ovens and business skills training to enable them to earn enough income to reduce their vulnerability.

While not central to the project purpose of rebuilding marine fish stocks, SFMP implemented a number of initiatives to reduce the practice of child labor and trafficking in the fisheries sector, which is particularly widespread in the Central Region. SFMP worked with MOFAD and the Ministry of Gender, Children and Social Protection to develop a National Anti-Child Labor and Trafficking Strategy for the fisheries sector. SFMP also supported the formation of Community and District anti-CLaT Committees that provided direct outreach in communities known for high levels of child trafficking and labor, conducted communications campaigns, and supported community volunteer advocates in the Central Region. SFMP worked to mainstream anti-CLaT activities into 9 coastal district medium term development plans in the Central Region who proposed a collective total budget allocation of GHS 4.5 million over five-years address CLaT issues. An analysis by SFMP, comparing baseline and 2019 surveys showed improved knowledge of laws, improved attitudes and a perceived reduced prevalence of child labor and trafficking along the coast.

In the last year of the project, USAID and URI co-created a response to the COVID-19 pandemic and potential impacts in the fisheries sector of Ghana. A coast-wide behavior change communications campaign was implemented using social media, TV, radio and posters to deliver messages crafted with the Ministry of Health and MOFAD on safe practices such as wearing masks, social distancing, and handwashing, tailored specifically to needs and concerns of fishing communities. Handwashing stations and supplies were provided to 242 of the 300 fish landing sites along the southern coast. A pilot social safety net program delivered cash benefits of \$52 per month for four months to 1,905 vulnerable households, 70% being female headed households. The documented process and results were provided to government of Ghana institutions for potential adoption for future economic, health or other shocks affecting fishing communities. The pilot has attracted attention in government for its potential use to provide an economic safety net to vulnerable poor fishing households using existing resources during closed seasons at a cost less than or equal to the monthly costs of the pre-mix fuel subsidy. SFMP also piloted diversified livelihoods for fisherfolk households in order for them to be less dependent exclusively on fishing for their livelihoods and provide a greater degree of household resilience to shocks (man-made or natural) in the fisheries sector. Documented viable models included supplemental income generation from soapmaking, TV and satellite installation and repair, and bakeries. Income generation was on average less than what a person makes in fishing, so was not viewed nor intended to be a total replacement to fishing livelihoods but intended as supplemental and diversified income generation opportunities.

## **Lessons Learned**

This final report provides detailed lessons learned organized by the main results areas of the project. Those deemed most important for future USAID investments are provided below:

### **Strengthened Enabling Environment for Marine Resources Governance**

**Program work and strategies need to realistically adjust expectations to match the capacity of the Fisheries Commission to implement.** Delivery of policy results requires tolerance for intermittent forward and backward movements in the process. Bureaucratic processes can be frustratingly slow to the extent that it throws programing and budgets out of planned cycles so projects must remain responsive and adapt to changes within the dynamic and bureaucratic processes of government.

**Political interference in fisheries enforcement and Chinese influences concerning the trawl sector and “saiko” are entrenched problems that are difficult for projects to**



**influence.** Effective navigation of these complexities means that interim plans must change while loosely keeping in mind project timelines and expected outcomes. The importance of continuous engagement, understanding, and support to key partners cannot be overstated. Political influence in the provision of subsidies and selective interference with enforcement for electoral capital, meant that it was important for non-political and external actors to improve the substance of dialogue and facilitate processes that minimize the role of politics.

**Voluntary compliance via moral suasion and coercive compliance via effective deterrence are both needed to reduce illegal fishing.** While necessary, collaboration and engagement are not sufficient to achieve sustainable management of fisheries resources. Successful arrest and prosecution of those who violate fisheries laws is also required. In Ghana enforcement eventually must include a collaborative effort with community members who can assist in reporting and serving as witnesses in enforcement actions.

### **Science and Research Applied to Policy and Management**

**Emphasis on improving the scientific basis for fisheries management decision-making, first of all by documenting and gaining widespread acknowledgement of the depth of the crisis, created urgency for action that was previously absent.**

**Building bridges between Local Ecological Knowledge and academic research energized student researchers and faculty to engage in adaptive management.** The principal factors contributing to the success of UCC/DFAS and the achievement of its objectives include the emphasis placed on effective communication and integration of participatory research that energized student researchers and faculty.

### **Creating Constituencies and Stakeholder Engagement**

**Fishermen-to-Fishermen dialogues and political level interactions with the Ministry, Fisheries Commission, leaders of associations, traditional authorities were critical to modeling the behaviors required in a co-management process.** The Fisher-to-Fisher program allowed fisheries stakeholders to interact with each other on key issues in a way that resonated within their individual communities. It was important to provide consistent and continuous support to stakeholder groups to build trust and provide an opportunity to learn and create their own dialogue to enable them to articulate desired management changes. Active involvement of the Fisheries Commission was also critical.

**Leveraging celebrity power in fisheries communication was very successful.** The campaign songs produced by the SFMP in collaboration with one of Ghana's popular musicians, Kofi Kinaata, proved to be very successful. Use of celebrity power in future awareness campaigns on issues in the sector is worth exploring, in building social capital for collective action.

**Digital communication channels can be used effectively.** Use of social media and virtual meeting platforms can be used effectively to reach out to a large proportion of fishers who can subsequently continue the dissemination process through word of mouth among segments of the fisher populations who do not have access to smart phones.

### **Applied Management**

**In the estuarine fisheries co-management pilots, community consensus on governance arrangements and management measures, and initial results drove effective implementation of these plans before approval by the government.** This reinforced and demonstrated an important shift in mentality among stakeholders. Proactive, consensus driven action can be taken by resource users with the urgency and the high levels of compliance required to positively impact fishing livelihoods and sustainable resource management.

**The attempted 2018 closed season failure demonstrated at national and local scales that policies and management actions must be demand-driven and bottom-up.** As one Fisheries Commission official stated at the time: “the paddle has broken the pen!” implying the need to have fishermen and their associations on-board and supporting any decisions concerning new management measures before they are officially carried out.

**You can “Sail the ship while building it.”** Action learning was important in demonstrating success in co-management even without formalized policy and legal frameworks.

**The high degree of voluntary compliance with the 2019 closed season owes much to the influence of traditional leaders and chief fishermen.** While formal structures are the law of the land, traditional authorities hold considerable power of moral suasion with their peers.

**The co-management process supported by SFMP in Ghana demonstrated the value and influence of science-based decision making.** Throughout implementation of the project, and the contentious policy and governance decisions that were made, the Science and Technical Working Group’s findings and recommendations were never questioned. While decisions on fishery management are ultimately political in nature and attempt to factor in social and cultural considerations, the value of establishing an independent scientific body cannot be overstated.

**The community-based management approach demonstrated quick small-scale examples of successful closures that helped bolster arguments in 2019 for its replication in the marine sector.** While probably not critical in tipping the balance of opinion for the marine closure, they did provide tangible local evidence of potential efficacy.

**A market-based approach will likely prove to be the most effective strategy for sustained and widespread diffusion of the *Ahotor* oven at scale, but the enabling conditions in Ghana’s post-harvest processing sector are still not conducive to achieving rapid and sustainable diffusion of this innovation.** The *Ahotor* oven developed by SFMP bridges the gap between the lowest cost, unhealthiest and most environmentally unsustainable traditional fish processing methods and the \$1000 FTT-Thiaroye improved oven that is out of reach economically for all but a few.

**To achieve widespread scale up of the Class 1 Certification Scheme, some key enabling conditions must be met.** The Class 1 Certification Scheme is a locally owned, standardized, nationally recognized and an attainable quality certification scheme for artisanal fish processing units. It shows promise as an approach of good practices in the production and trade of quality fisheries products. However, consumers are not yet familiar with the certification scheme or its label, and in fact consumer awareness of quality concerns and health risks for processed fish products in Ghana remains low. Price premiums and profit margins based on the value added of certification are yet to be proven as either likely or sufficient to foster greater adoption but could incentivize adoption of the *Ahotor* oven and certification. Moving into higher-value markets will require production of sufficient volumes of Class 1 certified fish to ensure a reliable supply to higher-value wholesalers and retailers.

### **Gender Mainstreaming**

**Extending the Voice of Women Beyond Fish Processing into Fisheries Governance is both necessary and entirely feasible.** Most members of fish processor associations strongly supported the 2018 and 2019 closed season declarations. Focusing mainly on a selected group of leaders and members of women’s associations, much progress was made but there is significant potential for women to become a much larger and organized voice for sustainable fisheries management in Ghana. Providing opportunities for leadership development at a larger scale is needed.

**The introduction of Village Savings and Loan Associations (VSLAs) has the potential to fill a critical gap in access to capital for women fish processors.** There is high demand in fishing communities that have seen the benefits of VSLAs already established by SFMP.

### **Capacity Development of Targeted Institutions**

**The SFMP organizational capacity assessment and development initiative helped stakeholder organizations more deeply understand their institutional roles, their status, and contributions as resource managers.** Local NGO and regional membership association implementing partners of SFMP measurably increased their contributions to the enabling environment for sustainable management. This resulted in a more robust local NGO and regional membership association presence in the fisheries sector.

### **COVID Response**

**Even when needs were urgent and timelines extremely limited, conducting audience research and engaging stakeholders in the development and implementation of SFMP's social and behavior change communications strategy was integral to the positive results achieved.** An extensive behavior change communication campaign on TV, social media, music video and radio and on the ground in fishing communities tailored to fisherfolks reached 300 fish landing sites. This strategy and its components were audience specific and proved effective. Audience research and community involvement was critical for ensuring the acceptance and sustainability of the intervention. Lessons from the SFMP's overall communications effort were applied to the COVID-19 education element. Most notably, the campaign song by one of Ghana's leading pop stars, Kofi Kinaata, was an instant hit song. It was a form of "*edutainment*" (education-entertainment).

**The deployment of the handwashing stations was critical in the success of SFMP's SBCC strategy, as community members had an opportunity to practice the information received from the IEC materials.** The deployment of handwashing stations to active fish landing and processing sites was based on a baseline survey of all fish landing and processing sites along the four coastal regions of Ghana by UCC. This baseline provided useful information about existing conditions (number of Veronica buckets on site – problems of no soap and water availability). This helped SFMP tailor implementation more appropriately to site-based needs. SFMP's strategy of training community members as advocates, providing a supply of consumables and the provision of stipends, ensured that all 242 were well maintained and ready for use. When problems did arise and stations became broken, the WhatsApp platforms were instrumental in getting that information to partners quickly so that they could be fixed by local artisans and put back into use as quickly as possible.

**Use of mobile money as the mode of payment for Economic Safety Net Schemes targeting extremely vulnerable fisheries dependent households was less efficient than expected.** Seventy five percent of selected beneficiaries did not own mobile phones, let alone mobile money accounts. Despite the widespread use of mobile phones and money in Ghana, the most vulnerable fisherfolk are excluded due to cost and they lack the literacy and numeracy skills to operate smart phone functions. Flexibility was required during implementation to add resources, level of effort and increase the time allocated for this. An unintended output was that the mode of payment precipitated the opportunity for more than 1000 poor and vulnerable households to be integrated into Ghana's digital financial economy. Use of mobile money to create financial inclusion for fisherfolk, especially poor households was challenging.

**Engaging beneficiaries of the Economic Safety Net Scheme in all stages of the program through their national association representatives was helpful but the approach had some limitations due to weaknesses of the capacity of these national associations.** The role

of fisheries associations in the roll out of interventions in the sector improved program delivery. Coordination for the selection of potential beneficiary households with support from SFMP Implementing Partners became extremely important when it was realized that the local representatives of GNCFC and NAFPTA did not have the capacity required for the process.

**In the absence of COVID-19, sufficient in-person engagement is required especially during the initial data collection and administration of a Proxy Means Test (PMT).** Proxy means testing is necessary to ensure truly poor vulnerable households are benefiting. The PPI tool showed that many of the nominated beneficiaries had low probabilities of being poor. Phone polling is not the best approach for PMT. This process needs time and a face to face meeting with the nominated households, similar to what the LEAP program does. This would provide better assurance that the program was reaching intended beneficiaries.

**Provision of sufficient time for each of the distinct phases and chain of actions is critical for effective implementation.** At least a year is required for effective engagement with beneficiaries. This is because the poor and vulnerable are usually the segment of the population that is most difficult to access and excluded from most social and economic activities.

**The incomes produced practicing non-fishing livelihoods piloted by SFMP in its' COVID response component depended to a large extent on trainees' individual entrepreneurial spirit, their networks, and their ability to find customers.** SFMP prioritized livelihoods that could be started after short trainings and with relatively low startup costs given the short period provided for the COVID response but most were making less than the average fisher's income.

**Trainees indicated interest and choice of livelihood options that were strongly gendered.** These differences stemmed from the perception that some livelihood options are typically 'male oriented' and others 'female oriented'. While the SFMP strategy intended to target mainly women and youth leading to select livelihoods options more favored by women than men. However, if fishing fleets are eventually reduced, this will limit the number of males that can go fishing, necessitating livelihoods programs to equally benefit both men and women.

### **Recommendations**

This final report provides a number of detailed recommendations organized by the main results areas of the project. Those most important for future USAID investments are provided below:

**Support development of a New National Marine Fisheries Management Plan.** The National Marine Fisheries Management Plan (NMFMP) adopted in 2015 expired in 2019. The preparation of the new NMFMP, 2021-2025, should use a more consultative approach to ensure inputs and concerns of stakeholders are well integrated in order to facilitate effective implementation.

**Promote implementation of the Co-Management Policy.** Significant progress was made on the policy and legal reform front during the implementation of the SFMP. There is a need for the Fisheries Commission to develop an operational plan and make necessary budgetary allocations in order to operationalize the policy and monitor the progress on key deliverables including the setting up of the Science and Technical Committee and the Small Pelagics Management Committee. The approved Co-Management Policy for the Fisheries Sector provides a roadmap for establishing committee structures where the major fisherfolk associations can participate more actively in fisheries management.

**Develop New Fisheries Legislation.** The Cabinet of the current administration has approved the drafting instructions submitted by MOFAD and prepared with SFMP assistance. The development of new fisheries legislation to address existing gaps and weaknesses in Ghana's fisheries laws should be pursued.

**Broaden the participation of women in fisheries management** by ensuring that non-members and non-active processing association members have opportunities to develop the skills and motivation they need to engage in fisheries management. This will require not only strengthening leadership, organizational, and technical skills, but providing literacy and numeracy training.

**Take a “men as partners” approach** to increase men’s support and reduce the additional burdens that may come about as women engage more in the fisheries sector.

**Provide workshops for political party representatives and support other measures that can effectively reduce illegal fishing.** Political interference has been identified as one of the major factors limiting enforcement of fisheries regulations and compliance of fishers with regulations. The level of non-compliance with sound technical regulations, such as ban on light and use of fine mesh nets and the “saiko” illegal transshipment of trawler catches are a main factor that contributed to the collapse of the fishery and must be adequately addressed if there is to be any hope of recovery.

**Sustain momentum on effective implementation of regulatory measures contained in National Marine Fisheries Management Plan that balance fishing capacity and effort with maximum sustainable harvesting levels.** It is vital for Ghana to sustain the momentum created through the successes attained during the SFMP and WARFP projects. Progress through closed seasons and canoe registration are not sufficient measures by themselves to rebuild stocks. There must be greater commitment to the implementation of measures to be outlined in the new NMFMP (2021-2025) in order for Ghana’s fisheries sector to achieve its objectives of sustainable harvests, increased productivity and economic growth.

**Promote adoption of improved fish smoking technology especially the Ahotor oven to reach a critical mass of early adopters that catalyze widespread adoption of the Ahotor oven.** Quality production and proper use of the *Ahotor* technology requires further development of training modules and qualified trainers. Future programming should support training of Fisheries Commission zonal officers to carry out construction monitoring and quality control to support this. In addition, the Ahotor network and knowledge-sharing platform established by artisans, processor associations, and NGOs (NAFPTA, DAA, and CEWEFIA) represents an opportunity to develop and institutionalize an incentive system to identify and recognize high-quality local artisans, increase competition between producers, and bring down *Ahotor* construction costs.

**Scale-up the Class 1 kitchen certification scheme.** This represents a realistic opportunity to promote the trade and consumption of quality fish in Ghana and for export. MOFAD should collaborate with the FDA to migrate the Class 1 recognition scheme on to the newly launched Progressive Licensing Scheme for cottage industries and small-scale food processors. This will allow Class 1 certified products to be sold in grocery stores and other high-value formal sector markets and may incentivize wider adoption of the *Ahotor* oven.

**Provide more access to credit and finance for women processors and traders.** Enabling conditions for access to credit will require building relationships and trust between financial institutions, processor associations, and the processors themselves. Part of this approach includes more effort to increase overall literacy and financial literacy among processors. Continuing the development of VSLAs to build financial capacity may help in some regions when combined with additional business development training for processors.

**Identify and work with local champions and associations** to reduce reliance on donor and project-based funding. Strengthen the organizational capacity of key women’s organizations such as NAFPTA who represent a broad constituency at the national and decentralized levels.

**Strengthen the functional and institutional structures of fisheries sector associations.**

Given the limited human and financial resources of the MOFAD/FC and the scale of the artisanal fisheries sector, enhanced functional and coordination capacity of the various fisheries associations to engage their membership to participate in co-management is critical. National membership associations should be a priority focus of capacity development support especially the GNCFC and NAFPTA.

**Continue education of fisherfolks on the coronavirus disease.** The COVID -19 educational materials developed by the SFMP can be applied for future engagements. As vaccines are becoming available in Ghana, new materials could be developed and disseminated on the benefits of getting vaccinated and to counter possible vaccine hesitancy among fisherfolk.

**Promote the incorporation of the SFMP COVID response social safety net pilot as part of the LEAP program.** While the main intent would be to compensate poor vulnerable households during closed fishing seasons, application for other shocks and disasters such as floods should also be considered.

**Consider conditional economic safety net assistance.** This would include evidence that children have been to a health clinic, or vaccinated, children are enrolled in school, or a member of the household is enrolled in a vocational training program during the period cash benefits are provided, or compliance with fisheries regulations, including not engaging in IUU fishing activities.

**Support gendered livelihood interventions for fishing households.** Developing diversified livelihood strategies for fishing households as a means of strengthening household economic resilience should be supported but understanding full well the challenges and failures of past approaches, globally and locally. While many donors and Ministries focus on youth and women, the fisheries context provides a unique case where men may no longer be able to earn an adequate living from fishing. Understanding the unique challenges, barriers and constraints that both men and women face is essential for crafting gender equitable livelihood strategies.

**Improve access to finance through savings.** A good savings and investment culture is needed to capitalize business start-ups, especially given the high interest rates prevailing in Ghana. Future livelihood interventions should focus on nurturing the business and financial management skills of startup entrepreneurs and linking them with financial institutions.

**Broaden stakeholder engagement in livelihood initiatives.** The process established for this pilot intervention can be scaled up with adequate resources to achieve results on a larger scale. An ecosystem of both private and public stakeholders with funding and technical expertise will be required to fully engage youth and offer them opportunities that orient their future away from fishing. These might include Mastercard Foundation, Tony Elumelu Foundation, African Development Bank (AfDB) and Alliance for Green Revolution in Africa (AGRA). These and many other organizations drive entrepreneurial ecosystem focusing on the youth.

## PROJECT BACKGROUND

Program Name	USAID Ghana Sustainable Fisheries Management Project
Activity Start and End Date	October 22, 2014 to April 30, 2021
Name of Prime Implementing Partner	Coastal Resources Center, University of Rhode Island
Agreement Number	AID-641-A-15-00001
Name of Sub-awardees	Central and Western Fish Mangers Association (CEWEFIA) Development Action Association (DAA) Friends of the Nation (FoN) Hen Mpoano (HM) Dassgift Quality Foundation (DQF) Spatial Solutions Resonance Netherlands Development Organisation (SNV) University of Cape Coast, Centre for Coastal Management (UCC-CCM)
Major Government Counterpart Organizations	Ministry of Fisheries and Aquaculture Development Fisheries Commission Land Use and Spatial Planning Authority (LUSPA), Central and Western Region
Geographic Coverage	Ghana: Central Region, Western Region, Greater Accra Region, Volta Region
Reporting Period	October 22, 2014 – April 30, 2021

### Project Goal and Objectives

The goal of the Sustainable Fisheries Management Project (SFMP) was to ***“Rebuild targeted fish stocks through adoption of sustainable practices and exploitation levels.”*** The project contributed to the Government of Ghana’s (GoG) fisheries development objectives and the US Government’s Feed the Future Initiative. The SFMP worked with the Ministry of Fisheries and Aquaculture Development (MOFAD) and the Fisheries Commission (FC) to end overfishing of key stocks important to local food security through achievement of the following Intermediate Results (IRs):

IR1 - Strengthened enabling environment for marine resources governance.

IR2 - Science and research applied to policy and management.

IR3 - Creating constituencies and stakeholder engagement.

IR4 - Applied management initiatives for targeted fisheries.

CROSS-CUTTING - Gender mainstreaming, public private partnerships and institutional strengthening.

The Coastal Resources Center (CRC) at the University of Rhode Island’s (URI) Graduate School of Oceanography was the lead implementer of the SFMP, working with a consortium of international and local partners. These included:

- Three local NGOs - Friends of the Nation (FoN) , Hen Mpoano, and Dassgift Quality Foundation (DQF -a microfinance NGO).
- Two local fish processors associations – Development Action Association (DAA) and The Central and Western Region Fishmongers Improvement Association (CEWEFIA).
- Two privates sector groups – Resonance Global (originally called SSG Advisors) and a local firm called Spatial Solutions.
- Netherlands Development Association (SNV) and The University of Cape Coast (UCC) Centre for Coastal Management (CCM).

DQF, Spatial Solutions and SNV cooperation phased out in years 3-4 and UCC was added on for the COVID response in the final year of the project.

SFMP focused efforts on the small pelagic fisheries along the entire coastal region of Ghana as well as fisheries and essential mangrove fish habitats in three coastal estuaries -The Densu, Pra and Ankobra systems. Additionally, SFMP supported improvements in the value chain of smoked fish, important to tens of thousands of women fish processors to ensure the production and trade in quality fish. In the first three years of the project, a coastal resilience and spatial planning component was implemented in the Central and Western regions. An small anti-child labor and trafficking component focused activities in the Central Region.

The project duration was originally approved from October 2014 to October 2019. A no cost extension for an additional 11 months was granted in April 2019 with a new end date through October 2020.

The unanticipated development the outbreak of the COVID-19 pandemic in Ghana in March 2020 was seen as potentially having dire consequences on the artisanal fisheries sector given the communal nature of landing fish and the related marketing and post-harvest activities. On May 28, 2020, the SFMP Cooperative Agreement with URI was modified to provide a 7-month cost extension through April 2021 for a COVID-19 response. A supplemental program description and budget was provided with the following result areas elaborated to achieve the purpose of the SFMP COVID-19 response initiative to; ***“Prevent the spread and mitigate the economic effects of COVID-19 among vulnerable households in fishing communities in Ghana.”***

- COVID 1: Fisherfolk at 300 landing sites, processing and/or fish markets sites better adhere to official COVID-19 disease prevention protocols.
- COVID 2: Two thousand extremely vulnerable fisheries-dependent households avoid extreme poverty.
- COVID 3: GoG has evidence on approaches for effective livelihood assistance to fishing communities affected by COVID-19.
- COVID 4: Cross Cutting Areas: Private Sector Engagement and Partnerships; Gender and Youth; Building for Sustainability.

This report details results, challenges and lessons learned for activities implemented over the Life-of-Project. It includes the achievements contributing to the overarching goal of the SFMP as well as details on the accomplishments of the SFMP COVID-19 response. Recommendations are also provided that are relevant to future donor efforts in the sector and for the Government of Ghana.



## The Problem

The project was designed to address the overfishing and overcapacity issues in the fisheries sector that were resulting in the collapse of the small pelagic fisheries and associated impacts on the artisanal canoe fisheries sector and fisherfolk livelihoods. Approximately 100,000 fishermen and 30,000 women processors and traders are engaged in the canoe sector. Over the past decade, more than 100,000MT of high-quality low-cost animal protein that was traditionally available to poor and vulnerable coastal and inland households has been lost due to poor management and overfishing. Local demand for fish outstripped supply, increasing pressure on already overexploited fish stocks. Open access fisheries, overcapacity among fishing fleets, and little or no fisheries management controls or effective enforcement of regulations resulted in rampant IUU fishing. Individual fishermen and women were losing economic ground while regional and national food insecurity increased with lower local fish supply. A weak enabling environment limited the ability to implement co-management or use rights. Meanwhile, the low value-added of fish processed locally kept fishing households poor, and less likely and less able to change behavior or engage in more sustainable practices. Mangrove ecosystems—essential fish nurseries for demersal fisheries—were also threatened by extensive cutting and habitat alteration.

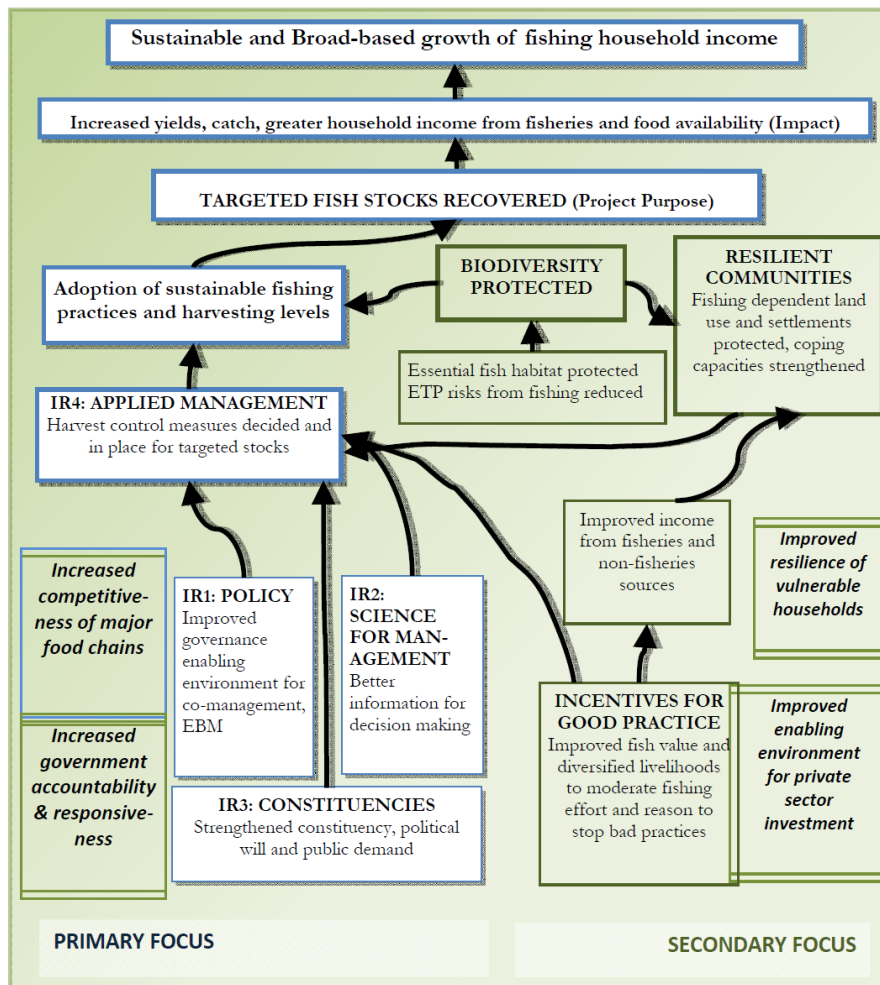
High poverty rates among fishing communities was leading some families to give up their children to child labor. The Central Region was viewed as a key recruitment area for child trafficking. Fishing settlement areas also are particularly vulnerable to climate variability and change due to rising sea levels, increased severity of flooding and high uncertainty about the effects of elevated sea surface temperatures and ocean acidification on the productivity of the marine ecosystems, and potential changes in migration patterns of commercially important fish. Add to this that local communities were unable to produce food locally due to land use changes that were reducing areas available for local food production. The end result is highly vulnerable coastal households and communities with weak adaptive capacity, and high exposure to climate impacts.

## Theory of Change

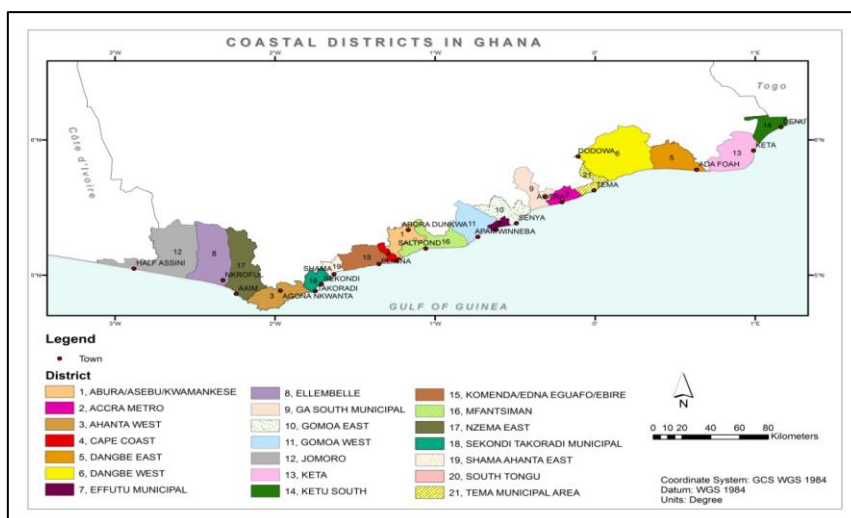
In order to address these socio-economic, biodiversity and climate change issues, the project set out to **“Rebuild targeted fish stocks through adoption of sustainable practices and exploitation levels”** through achievement of the intermediate results outlined above and described in the program description’s theory of change (see Figure 2). The project forged a campaign to build a local constituency for change in order to build the support of high-level decision makers and politicians. Through informed and empowered stakeholders, improved policies and a stronger scientific evidence base, fishing regulations could be put in place to achieve sustainable fishing.

## Geographic Scope

While the original request for proposal and project design set out to concentrate activities in the Central and Western Regions, building off the successes of the USAID Ghana Integrated Coastal and Fisheries Governance (ICFG) Project in the Western Region, pressure from government counterparts and stakeholders quickly resulted in most project activities related to the small pelagic fishery extending coast-wide within the coastal districts of the four coastal regions (Figure 3). Anti-Child Labor and Trafficking (CLaT) activities were focused on the Central Region. Several canoe fishing communities such as Elmina were targeted for intensive on-the-ground activities for post-harvest improvements and anti IUU fishing communications campaigns.



**Figure 2: Theory of Change showing causal links, sequences of interventions, intermediate outcomes and impacts, including linkage to USAID FtF and DO2 intermediate results.**



**Figure 3: Map of the Zone of Influence of the SFMP showing the 21 coastal districts. (SOURCE: Fishery FRAME Survey, Fisheries Commission, 2013)**

## Project Partners and Beneficiaries

The main project beneficiaries were fishing households in 21 coastal districts including fishermen, women processors and traders. The primary direct institutional beneficiaries were the Ministry of Fisheries and Aquaculture Development (MOFAD), The Fisheries Commission (FC), the Land Use and Planning Authority (LUSPA) in the Central and Western Regions, the University of Cape Coast Center for Coastal Management, two national fisheries associations – The Ghana National Canoe Fishermen’s Council (GNCFC) and the National Fish Processors and Traders Association (NAFPTA), and local implementing partners - Hen Mpoano, FoN, DAA, DQF and CEWEFIA.

## Project Strategy and Implementation Approaches

The overarching project strategy was to focus on effort control measures (e.g., closed season) and managed access (capping the number of fishing vessels via canoe registration) as well as promoting use rights and co-management in the fishery as first steps towards sustainability. The project promoted an ecosystem-approach to fisheries management that recognized the ecosystem as having both biological and human components that balance diverse societal and biological objectives and require consideration of multi-species management plans. Considering the nature of the small pelagic fishery in particular, this necessitated working at the national scale coastwide. The project considered the need for adaptive management with incremental implementation of approaches through trial and error. To have full effect and for sustainability, actions would need to be sustained longer than the life-of-project, but it was technically possible to start to see some improvements in the short-term due to the high fecundity and short lived life cycle of small pelagic species if enough management measures were effectively implemented early in the project life. This last approach provided the rationale for the ambitious project goal to rebuild stocks in the short span of a USAID project cycle - technically possible but politically and socially difficult.

### Fisheries Management Approaches

- From open access to managed access.
- From input controls to catch controls.
- From commons to use rights.
- From lack of clarity to transparency and accountability in management actions and measures driven by science and innovation
- From top down control to co-management.
- From static to adaptive management.
- Managing at ecosystem scales.
- Integrating management of the resource with improvements in the value chain.
- Inclusion of women in management decision making and livelihood improvements.

Each Intermediate Result (IR) area of the SFMP also had a tailored approach and are briefly described below.

**IR 1 – Improved policy and legal environment:** The SFMP approach to this intermediate result area involved a focus on promoting legislative amendments that would better enable co-management while at the same time working on a specific co-management policy that would provide a roadmap for implementing co-management in Ghana’s fisheries sector as called for in several of the national fisheries strategies and planning documents. In this regard, the work had to be national in scope and not just focus on the artisanal canoe fishery but also address changes needed for the inland and industrial fisheries sub-sectors. In addition, as the World Bank-funded West Africa Regional Support Project (WARFP) was also working on these

initiatives, SFMP coordinated with the WARFP team to ensure complementarity of investments.

Applying an integrated approach, SFMP linked the legal and policy initiatives to other intermediate result (IR) areas. For example, SFMP promoted the need for extensive stakeholder involvement, including men and women (IR5) from the start of the process to ensure their viewpoints were well incorporated so as to assure more effective implementation when new regulations and policies were finally adopted (IR3).

Lastly, SFMP used a “building the ship while sailing it” approach. This refers to modeling collaborative management activities such as the Fisher-to-Fisher dialogues (IR3), Science and Technical Working Group (STWC) (IR2), and piloting community-based management in several estuaries (IR4) even in the absence of formal policies. These activities modeled co-management practices in lieu of a specific policy, with the premise this would smooth transition to implementation as well as enable action learning to feed into legal and policy reforms. This also included careful review of Ghana’s initial failed foray into co-management in the years prior through a World Bank funded project to establish community-based management committees in over 100 landing beaches.

### **IR 2 – Strengthened information systems and science-informed decision-making:**

Globally, modern trends in sustainable fisheries management requires effective partnership between regulators and resource users guided by science driven decision making. Therefore, the project put in place a number of interventions to orient the Ministry of Fisheries and Aquaculture Development and the Fisheries Commission towards the need to be guided by science in both policy and management prescriptions, in addition to establishing effective engagement and partnerships with the various fisheries stakeholders.

The SFMP’s approach was founded on promoting technological innovations and effective participation of stakeholders in research and development (action learning) that supports strong and effective policies. Science is vital not only to understand how fisheries ecosystems function, but also how to monitor the conditions and trends of marine fisheries resources, how to unravel the causes and consequences of exploitation, and for finding appropriate solutions to ending key challenges such as overfishing, use of unauthorized fishing gears and fish habitat destruction. The project initiatives included building the capacity of the Fisheries Scientific Survey Division (FSSD), complementing efforts initiated under the World Bank’s West Africa Regional Fisheries Program (WARFP). The project also worked to facilitate the engagement of universities in actionable research, working hand-in-hand with stakeholders to formulate research questions and offer practical solutions to demand-driven problems. Particular emphasis was placed on contributing to the capacity building efforts at the University of Cape Coast Centre for Coastal Management and the Fisheries and Aquatic Sciences Department, complementing the USAID direct grant for capacity building in fisheries and coastal management at UCC.

### **IR 3 - Increased constituencies that provide the political and public support:**

Building a constituency and political will for change was central to the agenda of transforming the fisheries sector to elicit responsible fishing practices from fishermen and creating momentum for action. The communications strategy was designed to change stakeholder behaviors around key thematic areas in order to create a sense of ownership in the transformational processes required to support of the overall goal of the project. The main theme and messages centered around the dire consequences from the collapse of stocks of the people’s fish, the small pelagic fish species, and the urgent actions and management measures required to salvage the situation, including addressing IUU fishing. However, the strategy also called for behavior change communications campaigns to help improve the post-harvest value chain, adoption of new fish

smoking technologies, gender mainstreaming, and on issues surrounding child labor and trafficking in the fisheries sector.

**IR 4 Applied Management:** The overall goal of the SFMP of supporting the Government of Ghana to end overfishing and rebuild targeted fish stocks had the initial strategy in this IR area of developing nested governance arrangements, management plans and support actions for fishery management units at different ecosystem scales. The program description suggested work on small pelagic fishery management units, demersal fishery management units and small-scale estuarine fisheries management units. However, as the project started, SFMP became aware that the MOFAD and the Fisheries Commission were well along the path of having a National Marine Fisheries Management Plan for the marine sector completed and approved in 2015. Hence, SFMP had to change its approach and support implementation of the national plan. The Fisheries Commission showed no interest in creating regional demersal management plans so this initial idea in the program description was dropped. The estuarine initiatives however, continued as originally planned but were phased in starting in the second year of the project and phased out in the fourth year.

SFMP's post-harvest component aimed to improve efficiencies in the post-harvest value chain and ensure the production and trade of quality, healthy, sustainably harvested fish. To accomplish this, SFMP promoted improved fish smoking technology and practices that could provide economic, environmental and health benefits for processors and consumers. SFMP activities included training of fish processors and traders on improved fish handling, processing and packaging, and business skills development. In collaboration with the Post-Harvest Unit of the Fisheries Commission, the Ghana Food Research Institute of the Council for Scientific and Industrial Research (CSIR), the Ghana Standards Authority, and the Food and Drugs Authority, SFMP undertook research to design and then promote adoption of new smoking technologies. The *Ahotor* oven was the final design that was promoted (Figure 4), a fuel-efficient oven that produces less smoke and heat, as well as safer levels of Polycyclic Aromatic Hydrocarbons (PAHs), known carcinogens, than produced in commonly used *Chorkor* and Morrison ovens and at a more accessible price than the low PAH FTT fish smokers promoted by FAO.



**Figure 4. Ahotor Oven with layered fish smoking racks**

To expose processors to the new *Ahotor* technology, the project employed a market-based approach for the construction of ovens by trained entrepreneur-artisans and encouraged uptake of the technology through purchase by individual owners who were supported by outreach, technical and business skills training. SFMP augmented this with support for improved access to credit through local financial institutions and partial-cost grant support from SFMP. This approach was implemented and continuously adapted over time.

To incentivize adoption of the *Ahotor* oven, SFMP developed a food safety certification (called the Class 1 Recognition Scheme) for smoked fish, requiring ownership and use of the *Ahotor* oven as a prerequisite. Through SFMP's partners, Central and Western Fishmongers Improvement Association (CEWEFIA), Development Action Association (DAA) and the National Fish Processors and Traders Association (NAFPTA), interested processors had the opportunity to receive an *Ahotor* oven, as well as training on certification requirements and support in bringing their processing sites up to the standards of the Class 1 Scheme.

### **Cross-cutting Results:**

***Gender mainstreaming:*** Despite accounting for nearly half of the fisheries workforce in Ghana and playing a major role in financing fishing expeditions, women's voices have long been marginalized in fisheries management decisions. Ensuring all user groups and stakeholders are included in management decision-making was a core objective of SFMP. The project used a number of complementary approaches to strengthen women's role in fisheries. A first entry point was to improve the technical, business management, and financial capacity of post-harvest processors.

Efforts to systematically engage Ghanaian women in coastal fisheries co-management have been rare, and women's participation in decision-making processes, even those that directly impact their livelihoods, is limited. Hence, another important gender mainstreaming entry point for SFMP was to strengthen the leadership capacity among post-harvest processors as well as women who glean oysters and other bivalves in mangrove areas. A third entry point was to improve the general governance capacity for gender mainstreaming within the Ghana Fisheries Commission and local governments by implementing all activities in collaboration with local extension agents and stakeholders, ([Torell et al., 2019](#)).

SFMP's gender integration efforts began with a gender analysis (Torell et al 2015) that produced a detailed assessment of the fisheries sector value chain. Following the gender analysis, SFMP conducted a needs assessment (Okyere Nyako et al., 2015a) that identified the specific needs of women, women fish processors, and fishermen engaged in fisheries in the Western and Central regions. These two assessments informed the development of a SFMP gender mainstreaming strategy (Okyere Nyako et al., 2015b) that integrated aspects of gender into all of the project's interventions to maximize empowerment of women and contribute to building broader constituencies for sustainable fisheries management. A gender impact assessment conducted in 2018 found that the SFMP had in fact made important strides towards achieving these goals (Bilecki et al., 2018). Implementation of the strategy began in Project Year 2 (2016) and involved approximately 5,000 individuals in two main activity areas: (1) strengthening fish processor associations to become more effective stakeholders in fisheries management, and (2) supporting community-based management and use rights for women oyster harvesters in the Densu Estuary. An early accomplishment was the adoption at the national level of the "Gender Mainstreaming Strategy for the Fisheries Sector" (Ministry of Fisheries and Aquaculture Development, 2016).

***Public Private Partnerships:*** The SFMP approach to public private partnerships utilized SSG's (Resonance) Sustainable, Transparent, Effective Partnerships (STEP) methodology

which is a practical, hands-on approach that enables USAID and its implementing organizations to identify partnership opportunities, unlock potential shared value with the private sector, build and manage effective partnerships, and ensure results. The [partnership strategy](#) incorporated a number of principles including promoting partnerships that are aligned with both the project and private sector interests and using a co-creation participatory design process. Initially, a partnership specialist conducted scoping activities with over 70 local businesses and identified 10 partnership ideas. These ranged from partnerships to support diversified livelihoods of fisherfolks, micro-insurance, an IUU fishing hotline, a fishermen’s information network to share best practices, aquaculture ventures, among others. A workshop with stakeholders, including government, fisherfolks and private sector interests, narrowed those concepts further to three opportunities. Of these, two partnerships were developed; (1) a micro-insurance product developed with Millennium Insurance; and (2) a fisher’s calling network with Tigo modeled after Vodafone’s “Farmers Club.”

***Capacity Development of Targeted Institutions:*** A robust institutional ecosystem of engaged and performing, representative, transparent, and accountable government, public university, and civil society organizations is critical to drive and sustain the transformational change urgently needed to reverse unsustainable fishing practices in Ghana and secure future fisheries-based livelihoods and food security. The challenges of managing the fisheries sector currently surpasses the limited human and financial resources of the central government alone. Fishers, fish processors, and other stakeholders in the large artisanal sub-sector are likewise limited in their capacity to coordinate and effectively take concerted action to manage common resources for their own and common benefit without organization and representation at scale. This is especially true of the artisanal sub-sector that provides the majority of fish landings in Ghana. The SFMP invested in assessment and development of organizational capacity within 19 governmental, public university and local civil society organizations (CSOs) through approaches that would be locally appropriate, aligned with organizational objectives and needs, and lay the foundation for further institutional and organizational development post-SFMP.

### **The COVID-19 Response:**

In the last year of the project, a COVID intervention was designed via a co-creation process with USAID. As previously mentioned, there were three result areas all of which had varying approaches. A challenge during this phase of the project was the very short timeframe for implementation of activities – just 11 months from the approval of the cost extension until project end. Several activities of the original project design were also concluded during this period, as progress was slowed by the pandemic.

**Fisherfolk at 300 landing sites, processing and/or fish markets sites better adhere to official COVID-19 disease prevention protocols.** SFMP initiated interventions to keep fisherfolk safe and healthy in order to sustain seafood supply and distribution, which was seen as an essential industry during the pandemic. The SFMP developed a Social and Behavioral Change Communication (SBCC) strategy to drive compliance with and adherence to COVID-19 health and safety protocols in fishing communities. The development of the SFMP SBCC strategy was informed by specific factors and perceptions unique to fisher folks and prevalent in coastal communities in Ghana and these include the fisher folk’s perceived susceptibility, perceived severity, perceived benefits, perceived barriers to action, and low self-efficacy. SFMP collaborated with the Ministry of Fisheries and Aquaculture Development (MOFAD) and its Fisheries Commission (FC), Ministry of Health (MoH), Ghana Health Service (GHS), and fisheries associations to develop and implement the strategy that included:

- Development and dissemination of IEC materials,

- Set up of a virtual communication platform on WhatsApp for fisherfolk,
- A COVID safety competition for fish landing sites, and,
- Provision of handwashing stations & supplies to fish landing & processing sites.

The strategy intentionally sought to develop information and education messages that were culturally sensitive and appropriate for fisherfolk to better help them change behavior. This was realized through engagement with fisherfolk through the GNCFC, NAFPTA, Chief Fishermen and *Kokonhemaas*, (a traditional position as a chief fish trader at landing sites) to identify appropriate tools, people, and channels for communication and education and in the development, pretest, and finalization of key messages and materials.

**Two thousand extremely vulnerable fisheries-dependent households avoid extreme poverty.** SFMP designed and piloted a cash transfer program targeting 2000 economically vulnerable fisheries dependent households at risk of not meeting their basic food needs due to the COVID pandemic. The methodologies piloted built on existing SFMP partner relationships with fishing communities and the Fisheries Commission. The aim was to use this opportunity to put in place structures and processes that can be leveraged in the future to reinforce long-term systems for responsible fisheries management and fishing community coping strategies, such as providing support to vulnerable fishing households during a closed season.

SFMP consulted with the major fisheries associations in Ghana including the Ghana National Canoe Fishermen’s Council (GNCFC) and the three female led processor associations Development Action Association (DAA), Central and Western Fishmongers Improvement Association (CEWEFIA), and the National Fish Processors and Traders Association (NAFPTA) in order to harness their local knowledge and ensure their buy-in and cooperation. SFMP set up a virtual WhatsApp platform of fisheries association representatives for communications, especially considering the COVID situation and desire to reduce physical meetings and travel. Representatives worked to nominate potential beneficiary households for the cash transfer economic safety-net pilot. The project also consulted the Metropolitan, Municipal and District officials and established a multi-stakeholder ad hoc technical committee which was chaired by The Ministry of Gender, Children and Social Protection. Criteria for selecting beneficiaries was developed by the fisherfolk associations, assisted by local implementing partners DAA, CEWEFIA, HM and FoN , who were then tasked to sensitize the fisherfolk and nominate candidate households. A list of potential beneficiaries from all villages and districts along the coast was created. The list was subjected to validation by a Proxy Means Test using the Poverty Probability Index ([PPI](#)).

The objective of the cash transfer program was to support declining household consumption due to the COVID-19 restrictions among the most vulnerable or poorest fishing households. The value of the cash transfer to each beneficiary was the Cedi equivalent of US \$52 per month for four months at design stage. This amount covers an estimated 20% of household consumption for households at the [international poverty rate](#) of \$1.90 per day per capita which [is similar to the Ghana national poverty rate](#). A mobile money platform was used to transfer cash to beneficiaries. SFMP contracted the services of a digital financial service provider, to first validate that all mobile numbers matched with the names of the selected beneficiaries before payments were made. Final beneficiaries who did not have their own phone numbers were supported by the leadership of the fisheries associations to acquire and register SIM cards with a mobile money network of their choice before they received their cash transfer.

**Diversified Livelihoods.** The COVID-19 pandemic presented an opportunity to test livelihood options that could build individual and household resilience in the face of the dual threats of declining fish catches and COVID-19 by providing stable income and new economic



opportunities for fishing communities in the long-term. SFMP implemented a diversified livelihoods support program targeting women and youth (ages 18-35) from fishing households. The emphasis was on diversification rather than “alternative” livelihoods that could enable fisherfolk to leave the occupation of fishing. Prior experience demonstrates this can be a challenging and time-consuming process. Diversifying sources of income at the household level can build resilience and make it possible for fisheries-dependent households to provide for basic expenses such as a nutritious diet, medical expenses and education for their children during COVID-related economic shocks or when fisheries measures are implemented to rebuild depleted stocks such as seasonal closures.

SFMP engaged local partners that work directly in fishing communities to facilitate stakeholder engagement through focus group discussions and key informant interviews. This process identified high potential livelihoods of interest to women and youth from fisheries households. SFMP collaborated with DAA, CEWEFIA, FoN and HM to implement this component. SFMP identified specialists to provide technical training for each viable livelihood type identified, mobilize training participants, disburse in-kind grants as livelihood starter packages after trainings had been completed, and to link interested participants with financial institutions to open bank accounts. In addition, SFMP worked with DAA and CEWEFIA to conduct a rapid market test of alternative products produced using the Ahotor smoking oven. This was seen as an opportunity to use existing skills and equipment to generate income outside of the fisheries sector. SFMP also provided in-kind grants to a small number of individuals from fishing communities that did not participate in SFMP livelihoods trainings. These grants were targeted to either encourage individuals already practicing non-fishing livelihoods to scale up their activities, or to support those who had received livelihoods training elsewhere but lacked financial resources to launch their new businesses.

## PROJECT ACCOMPLISHMENTS RELATIVE TO EXPECTED RESULTS

### IR 1: Strengthened Enabling Environment for Marine Resources Governance

The SFMP improved policy and legal enabling conditions for implementing co-management, AAND use rights, and laid a foundation for managed access and effort-reduction strategies in the canoe sector via canoe registration. Expected versus actual results are summarized in the Table 2 below. For this intermediate result area and others, the expected results are as initially written in the Program Description and periodically amended in approved Monitoring, Evaluation and Learning Plans as the local context became known and changed, applying an adaptive management approach.

Development of policies, plans, and strategies under the SFMP was coordinated closely with MOFAD and the Fisheries Commission, and for legal reform and the co-management policy in particular, with the West Africa Regional Fisheries Program (WARFP).

**Table 2: IR 1 - Expected versus actual results for strengthened enabling environment.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• Fisheries act changes analyzed with stakeholders and with explicit language for co-management and use rights</li> <li>• Strategies for effort reduction and fuel subsidy phase-out debated and policy options presented to MOFAD/FC</li> <li>• Policy recommendations concerning ways to reduce child labor and trafficking presented to the National Steering Committee</li> <li>• Significant increases in IUU fishing arrests made and successful prosecutions act as real deterrence and coerce more compliant fishing behavior</li> <li>• Advances made toward fostering regional leadership to attain a harmonized trans-boundary response to Sardinella stocks</li> </ul>	<ul style="list-style-type: none"> <li>• Analysis and stakeholder consultation completed and permission by Cabinet to revise the National Fisheries Act, 2002 (Act 625) granted.</li> <li>• A National Co-Management Policy adopted.</li> <li>• Three Community-Based Fisheries Management Plans for the Ankobra, Pra and Densu estuaries adopted and implemented, delegating exclusive fisheries use rights to fisheries associations for the first time in Ghana.</li> <li>• An approved National Fisheries Management Plan to achieve sustainable fishing implemented.</li> <li>• Analysis of the impact of subsidies on fisheries management provided and informed public discourse by national political parties.</li> <li>• A National Fisheries Sector Anti-Child Labor and Trafficking Strategy adopted and anti-CLaT actions incorporated into medium term development plans for districts in the Central region.</li> <li>• A National Fisheries Sector Gender Strategy adopted.</li> <li>• A strategy (Fisher Volunteer Watch) to involve fishers to assist law enforcement and conduct peer educational outreach developed.</li> </ul>

## **1.1 Legal Reform**

Legislation provides the basis for sustainable management of fisheries resources, establishes basic management principles and provides the rules for monitoring, control and surveillance to ensure effective enforcement and compliance with management interventions. Robust legislation also provides the framework for the fisheries sector to support the government's development agenda and facilitate implementation of Ghana's international commitments and obligations.

In addition to support by the World Bank and the European Union, the SFMP provided financial and technical support to the Government of Ghana, civil society and other fisheries stakeholders to facilitate a fisheries sector legal review process. The process included comprehensive analysis of Ghana's Fisheries Act by legal experts and workshops with stakeholders from all the major fisheries associations, academia and NGOs. The general view among fisheries managers, international experts and the fishing industry was that Ghana's Fisheries (Act 625) was outmoded and that new fisheries legislation was required to drive the necessary reforms in the sector, secure its contribution to GDP and lay the foundation for long term sustainability, food security, and increased profitability.

Submission of new fisheries legislation for consideration by Parliament is normally preceded by approval to start a legislative drafting process by the Cabinet. Although Cabinet approval was obtained under the previous political administration in 2015, it became apparent that the Ministry, under the new administration in 2017, needed to obtain new Cabinet approval to proceed. SFMP supported the process through the engagement of a legal expert, a renowned Ghanaian international marine and fisheries expert, serving as professor emeritus and Director of the Australian National Centre for Ocean Resources and Security. The legal expert gathered information on previous and ongoing initiatives on the legal reform recommendations including reports from the technical committee set up in 2015 by MOFAD to develop drafting instructions for consideration by the Attorney General and a review of the Fisheries Act 2002, (Act 625) by a World Bank consultant. The SFMP legal expert also collaborated with a legal expert engaged by FAO at the request of MOFAD to avoid duplication of efforts. SFMP also collaborated with two EU projects implemented by CARE Ghana and the Environmental Justice Foundation to solicit inputs from stakeholders including fishers, CSOs, NGOs, industry associations, and MOFAD/FC staff<sup>1</sup> to support the legislative reform process.

The SFMP set up a [web-based portal](#) to facilitate information sharing, collation of inputs, and comments on the process and initial draft document. The portal held relevant laws, reports, articles and documents. In February 2019, working with Fisheries Commission and MOFAD staff, a draft Cabinet Memorandum detailing the justification for the new fisheries legislation was submitted to MOFAD and the Fisheries Commission Board for their consideration, review and transmittal to Cabinet. The Cabinet Memorandum was finalized and submitted to Cabinet by MOFAD towards the end of 2020 and was approved for action. As of May 2021, the Ministry had not started the process of revising and submitting a draft bill to Parliament, however all the legal reviews and recommendations for changes are in their hands for use in the final process of law adoption.

## **1.2 The National Co-Management Policy and Associated Community-Based Management Plans**

Working with the MOFAD and Fisheries Commission, SFMP led the process of drafting a Fisheries Co-Management Policy document, involving extensive stakeholder consultations,

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<sup>1</sup> The Environmental Justice Foundation also produced a document highlighting the obligatory and voluntary commitments of Ghana under international commitments and compacts as input into the law revision.

and many rounds of drafting, workshops, discussions, and input. Initially coordinated with WARFP until its termination in 2018, the SFMP took over full responsibility to assist MOFAD and the Fisheries Commission in finalizing the Policy to enable the implementation of Ghana's Fisheries and Aquaculture Sector Development Plan. In early 2019, a draft co-management policy and its accompanying Cabinet Memorandum and three community-based management plans were submitted to the MOFAD for final review and onward submission to Cabinet for approval and implementation.

This policy document provides guidance for the implementation of co-management approaches specific to the Ghana fisheries sector. It draws on experiences and lessons learned from the challenges and failures of previous community-based fisheries management efforts in Ghana. To demonstrate how the policy can work in Ghana, SFMP supported the development and implementation of three community-based management pilot initiatives in three estuaries – the Ankobra, Densu and Pra. This action learning approach informed the development of the national co-management policy. The fisheries co-management policy supports the devolution of some fisheries management actions from the MOFAD and the Fisheries Commission to resource users. The Co-Management Policy for the fisheries sector was approved by Cabinet and gazetted in November, 2020 for subsequent implementation.

Subsequent to gazetting of the Co-Management Policy for the fisheries sector, the Fisheries Commission approved the three pilot Community-Based Fisheries Management Plans for the Densu, Pra, and Ankobra estuaries in December 2020. The efforts leading to the development of these unique local plans provided learning experience for community participants, Fisheries Commission staff and the local partners who carried out technical work and guided their preparation. The approved plans provide for the first time in Ghana, use rights for specific fisheries in delineated geographic areas to local associations of fisherfolks, and a particularly important precedent, to a women's association of oyster harvesters in the Densu estuary.

### **1.3 National Gender Mainstreaming Strategy**

Gender roles in Ghana's fisheries sector are clearly delineated. Men dominate the extractive process while women are mainly engaged in fish processing and trading. Women account for nearly half of the fisheries workforce and there are an estimated 30,000 women engaged in processing, marketing, and trade of fish along the coast of Ghana. A major element of the theory of change driving the SFMP was that sustainable fisheries management in Ghana could be attained if all user groups and stakeholders are included in management decision-making. Efforts to systematically engage Ghanaian women in coastal fisheries co-management are rare and their participation in decision-making processes, even those that directly impact their livelihoods, was limited at the onset of the project. SFMP supported dialogues and the drafting of a [National Gender Mainstreaming Strategy for the Fisheries Sector](#) approved by the Minister in 2016.

### **1.4 The National Anti-Child Labor and Trafficking Strategy and District Plans**

Child Labor and Trafficking (CLaT) within the fisheries sector is an area of concern which requires action from Government. The Request for Proposal for the SFMP required inclusion of activities to address this problem even though this is not central to the overall project purpose. With over 50,000 children involved in fishing and associated activities, the SFMP and partners supported MOFAD to develop a national [Anti-Child Labor and Trafficking Strategy for the Fisheries Sector](#) which was adopted in 2018. The strategy identifies priorities and related actions to address challenges associated with illegal child labor and trafficking in the fisheries sector.

## **I.5 Review of Input Subsidies to the Artisanal Sector**

One of the biggest problems confronting the artisanal fisheries subsector in Ghana is excess vessel capacity exacerbated by low-cost pre-mix fuel and other input subsidies in an open access regime. Fuel and equipment subsidies camouflage the true cost of fishing and prevent this cost from being internalized by fishers resulting in overcapacity of vessels in the artisanal sector. This means there are more boats than are necessary to harvest the fish resources sustainably. While the initial intent of the subsidies provided by government was cost reduction and profit maximization for the canoe fleet, over the years, the open access regime and generous fuel subsidies incentivized an increasing number of canoes entering the fishery which resulted in the eventual dissipation of the intended benefits along with exacerbation of the overfishing problem.

Recognizing the political dynamics of subsidies in the fisheries sector, SFMP commissioned a study to assess the problem. The [subsidies study](#) described the magnitude of the subsidy and provided examples of how the \$45 million that the Government of Ghana spends annually on “bad” subsidies could be channeled into “good or neutral” non-fishing capacity enhancing subsidies or eliminated altogether. When the project started there was little dialogue in the public arena on contributing effects of fuel subsidies to the overfishing problem or how it could be transformed. The SFMP collaborated with the University of Cape Coast’s Centre for Coastal Management to bring the world-renowned fisheries economist, Rashid Sumaila, as a keynote speaker to highlight the subsidy topic at the August 2019 Conference on Fisheries and Coastal Environment. SFMP also organized an engagement with political parties on fisheries and coastal issues on 22<sup>nd</sup> September, 2020. One of the issues debated was subsidies to the fisheries sector in the form of pre-mix fuel.

As of May 2021, there have been no concrete actions by the government to remove or reduce subsidies to the canoe sector as this remains a highly sensitive political topic. The SFMP study and communications on the detrimental impacts of subsidies, have resulted in this issue now entered in the public dialogue on fisheries reform in Ghana. Anecdotal evidence and several studies suggest that many fisherfolks would like to see the subsidy ended due to alleged corruption in its implementation and use for political favoritism. The SFMP COVID-19 economic safety-net cash transfer pilot for fisheries dependent households provided MOFAD and the Government of Ghana with additional recommendations on opportunities to redirect pre-mix fuel subsidies to support poor fishing households during closed fishing seasons.

## **I.6 The Fisheries Watch Volunteers Initiative**

In 2015, the Ghana National Canoe Fishermen Council (GNCFC) discussed with MOFAD and the Fisheries Commission, the need for greater support towards local level law enforcement to stem various Illegal Unreported Unregulated (IUU) fishing activities. To build the capacity of the GNCFC and other local fisher’s groups towards fisheries law enforcement, SFMP in collaboration with MOFAD, the Fisheries Commission, and the WARFP, organized a study tour to the Philippines to observe firsthand how fishers in that country have been supporting law enforcement through the “Sea Watch” (*Bantay Dagat*) system. Lessons learned from the visit provided inputs for a Ghana pilot initiative that adopted the *Bantay Dagat* approach.

SFMP, the Fisheries Commission, and the GNCFC supported the selection, training, and formation of pilot Fisheries Watch Volunteer (FWV) groups in two districts (Accra Metropolitan Assembly and Ada East). A manual for FWV operations was developed. The institutionalization of the FWV was endorsed in 2016 when the Parliamentary Select Committee on Food, Agriculture and Cocoa Affairs met with the SFMP and the Ministry. The launch of FWV in May 2017, at Ada in the Greater Accra Region was, however, met with

strong resistance by a group of fishers within the Ada West District who viewed the FWV as political organization set up to curtail their illegal light fishing practices.

While the FWV concept showed great promise in support of fisheries law enforcement, the incident in Ada resulted in the Ministry and the Fisheries Commission suspending the program in order to enable the Ministry to undertake further engagement with stakeholders prior to its re-implementation. At that time SFMP ended further support to the Fisheries Commission for the FWV program. However, the Ministry of Finance's 2018 budget statement to Parliament included budgetary provisions for the formation of more FWV committees in coastal regions. Subsequently, under the European Union (EU) project 'Sustaining Fisheries Livelihoods' (*Far Dwuma Nkodo* or *FDN*) implemented by Environmental Justice Foundation and Hen Mpoano, a platform was created to engage artisanal fishers to contribute to improved collaboration in fisheries enforcement. Based on the FWV concept, the Fisheries Commission successfully scaled-up the concept and established 48 Landing Beach Enforcement Committees (LaBECs) in the Central Region. Building on the curriculum guide developed by SFMP, the EU project trained over 700 fishers in monitoring, surveillance and evidence gathering on land and at sea related to IUU fishing. The LaBECs were inaugurated by Fisheries Commission officials in December 2020. While not attributed solely to SFMP, SFMP's role in the early phases of design and piloting contributed to this achievement.

### **1.7 Improving Law Enforcement and the Prosecutorial Chain**

One of the key strategic actions employed by SFMP to address IUU fishing included prosecution chain workshops to review the prosecution process and develop strategies to address challenges and forensic weaknesses in arrests and prosecutions. The aim was to increase the likelihood that arrests would lead to convictions and punishment and serve as greater deterrence against illegal fishing. This process was successful when applied in the Western Region under the USAID ICFG Project. Inadequate interactions by prosecutorial chain stakeholders was identified as an important obstacle, even though they each by themselves were all working on prosecuting fisheries violations and related issues. The SFMP-supported fisheries prosecutorial chain workshops provided a platform that promoted improved inter-agency dialogue and collaboration to improve deterrence of fisheries sector violations.

SFMP also supported development of a competency-based capacity development approach, particularly for the Marine Police Unit (MPU) and Fisheries Enforcement Unit (FEU). The process identified, profiled, and jointly processed key knowledge, skills, and attitude requirements for effective monitoring, control and surveillance. A fisheries enforcement induction training curriculum was developed and used to train 160 MPU and FEU personnel. A Training-of-Trainers program was designed by SFMP in partnership with the UNDP Organized Crime Unit to facilitate a knowledge and skills transfer program for the Marine Police Unit and build the competency-based approach into programming at the Marine Police Training Center.

Inadequate political commitment and support for prosecution of fisheries offenders were identified as the top obstacles for successful prosecution of violators. High-level political interference in prosecution favors offenders and is carried out by politicians or political functionaries who are connected to violators in various ways, or who are looking to gain political favor. Inadequate financial and logistics for enforcement agencies further reduces effectiveness and morale of enforcement agencies. SFMP provided two vans to the Fisheries Enforcement Unit to improve mobility of enforcers and enhance land-based enforcement patrols. SFMP activities to build law enforcement and prosecutorial capacity were phased out after Year 3 after concluding that these activities had little impact on illegal fishing as political

interference was deemed to be the key factor suppressing effective law enforcement actions and resulting in low deterrence for illegal actors.

## **IR 2: Science and Research Applied to Policy and Management**

The SFMP improved fisheries management processes by engaging scientific research and findings as part of the driving forces and rationale for dynamic and adaptive fisheries management. This component intended to create and facilitate collaboration and improve capacity of fisheries sector institutions to collect and analyse data and integrate innovative technology into management strategies. Expected versus actual results are summarized in Table 3 below.

**Table 3: IR 2 - Expected versus actual results for applied science.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• UCC producing/delivering relevant science-based information and convening trainings and workshops with the FC and stakeholders to promote science-based decision making</li> <li>• Several ICT innovations for mobile apps being used in fisheries management</li> <li>• Improving fisheries and GIS data, utilizing stock assessments in management processes</li> <li>• A formalized science and technical committee advising the FC</li> <li>• UCC providing competent personnel to GOG and stakeholder groups, businesses</li> <li>• Capacity of more than a dozen district authorities to promote and support resilient community policies and initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>• UCC-CCM delivered training programs for professionals in various technical areas of fisheries and coastal management.</li> <li>• UCC applying UAV technologies for coastal and fisheries planning purposes. Baseline image surveys for 22 discrete locations, totaling 327,442 images covering 125 km<sup>2</sup> available.</li> <li>• UCC and FSSD using mobile technologies for data collection.</li> <li>• UCC and FSSD capacities for fish stock assessment increased through short and long-term trainings.</li> <li>• A science and technical committee mandated via the approved co-management policy framework.</li> <li>• The Science and Technical Working Group, led by local scientists produced annual status reports of the small pelagic stocks in 2015 through 2019.</li> <li>• Scientific recommendations for a closed season accepted and applied by MOFAD/FC.</li> <li>• Scientific recommendation of modified timing of the annual closed season applied for 2021 closure in July.</li> <li>• Fisheries stakeholders actively engaged in scientific data collection and application of findings.</li> <li>• 32 (m=17, f=15) UCC students and faculty benefitted from higher education opportunities at URI.</li> <li>• Central Region LUSPA GIS Training Center operational without SFMP support.</li> <li>• Spatial planning capacity of LUSPA and all coastal District Councils strengthened in the Central and Western Regions.</li> </ul>

## 2.1 Improved Use of Science and Technical Information in Decision Making

In 2015, the SFMP established a multi-stakeholder's scientific group (STWG) to support the MOFAD and the Fisheries Commission with implementation of the National Marine Fisheries Management Plan (NMFMP). SFMP's goal in establishing the STWG was to assure long-term sustainability of fish stocks based on the best available, non-biased, scientific information and as a vehicle to build Ghana's capacity for conducting stock assessments and improved data collection. Members of the STWG represented government and academic institutions, fishing industries, and traditional authorities.

Members of the STWG worked in close collaboration with FSSD staff, which provided data and expertise to carefully examine existing data and other fisheries related studies to improve understanding of the current status of various fish stocks. The STWG also worked to establish practical indicators to monitor fisheries management performance measures toward a healthy and sustainable state of fisheries. Fishermen were included as key members of the STWG to add their local ecological knowledge and experience in the formulation of scientific reporting and the development of management recommendations.

The STWG produced annual status reports of the small pelagic and demersal stocks from 2015 to 2019. These STWG reports were presented to MOFAD, the Fisheries Commission and industry associations, and at several national forums. The STWG final report on the status of the small pelagic fish stocks of Ghana was produced in 2020 ([Status of the Small Pelagic Stocks in Ghana in 2019](#)). This final report concluded that the Sardinella and small pelagic stocks had collapsed. This is a critical state of affairs and demonstrates that in spite of all the advancements made to date in Ghana, there is still a long road ahead to rebuilding these important fish stocks and achieving the goal of the SFMP.

The STWG assisted the Fisheries Commission to develop implementation strategies for the NMFMP, recommended terms of reference for the planned operational committee to monitor implementation of the NMFMP (2015-2019) and advised on other fisheries-management related matters. The STWG's Chairman, Professor Kobina of UCC, participated in national radio and TV programs to discuss scientific findings on the status of fish stocks and science-based recommendations of the STWG.

In 2018, the Ministry and Fisheries Commission accepted the recommendation by the STWG to implement a closed season for all fleets during the peak spawning period in August to maximize the biological gains of the initiative. However, fishers in some regions rejected the recommendation citing conflict with their cultural practices (annual festivals) and the short notice prior to the commencement of the intended closure. Subsequently, the largest member association of artisanal fishers, the Ghana National Canoe Fishermen Council (GNCFC) also rejected the idea. As a result of the public outcry, the Minister rescinded the decision to close artisanal fishing in 2018 and formed a special committee to review the STWG reports and advise on the scheduling for a 2019 closure. In 2019, The Ministry of Fisheries and Aquaculture Development (MOFAD) implemented a one-month fishing closure for artisanal and semi-industrial fisheries from May 15 to June 15 to protect the spawning brood stock of small pelagic species and reduce fishing effort on these stocks.

The timing for the artisanal fleet closure in 2019 became the main topic of discussion in many forums, workshops, radio and TV programs. Fishers ultimately agreed to a closure from May 15 – June 15, 2019 even though the agreed period lacked scientific backing. The acceptance by artisanal fishermen of the first ever artisanal fleet closure in Ghana's history marked a significant shift in the debate from outright rejection of a closure to discussion on the best suitable period to maximize biological gains. In the end, artisanal fishers embraced the closure, facilitated through the SFMP-sponsored Fisher-to-Fisher dialogues and when the 2019 closure



was implemented, there was almost complete voluntary compliance among artisanal fishers across Ghana's entire coast. The SFMP's role in creating high voluntary compliance was seen as critical given limited resources at the disposal of Government for enforcement.

Following the closed season declaration and at the request of the Minister, the Fisheries Scientific Survey Division (FSSD) of the Fisheries Commission, in coordination with the STWG and with the support of the SFMP, established a monitoring and evaluation plan to assess the biological and socio-economic effects of the closed season as well as the adaptation strategies of fishers and fish processors, and report the findings back to MOFAD. Monitoring and evaluation was essential in providing lessons learned and an informed framework for future seasonal closures. Supported by SFMP, the FSSD led the monitoring and evaluation team which included respected fishermen from all coastal regions to lend credibility and to improve collaboration between fishers, scientists and regulators. Through the active participation of fishers in the identification of the maturity stages of the fish (i.e., whether fish were spawning during the closed season), the fishers became more informed and appreciated better the scientific basis for scheduling the closed season to coincide with the peak spawning period of the small pelagic species.

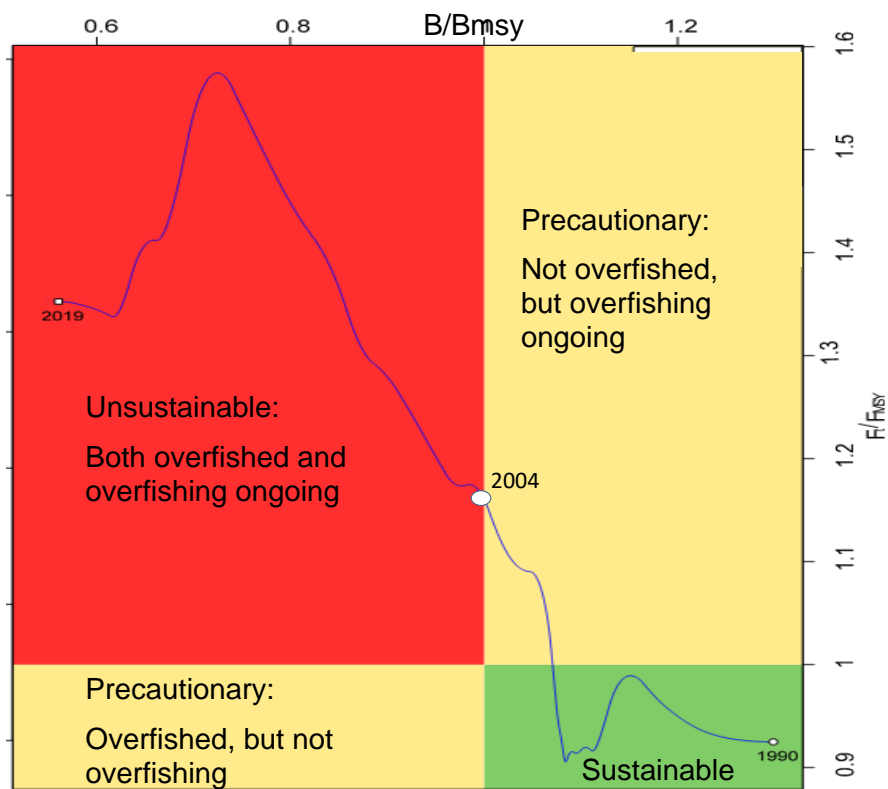
The Report: [Assessing the Biological Effects of the Closed Fishing Season Implemented for the Artisanal and Semi-Industrial Fisheries in Ghana, 2019](#), described the biological effects of the closed season. A key conclusion of the assessment was that the timing of the closure was not appropriate, and as result, the exercise likely had little effect on stock recovery. Subsequently, MOFAD accepted a changed time for the closed season to the month of July for the 2021 closed season. In addition, the SFMP assessed the short-term socio-economic impacts of the closure on artisanal sector and the canoe fishing households ([Assessment of the Socio-Economic, Food Security and Nutrition Impacts of the 2019 Canoe Fishery Closed Fishing Season in Ghana](#)) The assessment documented significant declines in fishing household income, increased levels of severe and moderate hunger levels and a decrease in dietary diversity of women of reproductive age. This report highlighted the need for improved resilience building of fishing households and set the stage for major livelihood objectives being incorporated into the USAID Ghana Fisheries Recovery Activity and the cash transfer livelihood components of the SFMP COVID response.

The STWG introduced new assessment techniques for fisheries stock management such as Biomass Dynamic Modeling and Surplus Production Modeling to estimate annual fishing mortality rates and standing biomass of fish stocks. Other techniques for calibrating observed fishing effort collected by FSSD were tested and applied. It was well known that, before SFMP, stock assessments conducted by FAO/CECAF using non-standardized effort data did not produce accurate estimates of fishing mortality and stock size. For example, the fishing trips of 1990 were less efficient than those observed in recent years due to trip duration, new technologies (depth sounders, GPS), and larger boats, nets and crew size. The increased efficiency of the fishing trip required the introduction of standardization methods to calibrate fishing trips and therefore remove bias from the catch per unit effort (CPUE) data to accurately characterize the status of the stocks. A new time series of CPUEs were generated using the Generalized Linear Modeling (GLM) technique and were subsequently used in the Biomass Dynamic Modeling to estimate non-biased estimates of fishing mortality and standing biomass.

The STWG introduced the concept of fisheries management benchmarks, based on biological reference points. It was associated with the acceptable fishing mortality rates ( $F_{msy}$ ) and the level of biomass needed to maintain the sustainability of fish stocks ( $B_{msy}$ ). These reference points set boundaries intended to guide fisheries managers in constraining harvests to within safe biological limits. In Figure 5 below shows the historical changes in the biomass and fishing

mortality benchmark estimates, the green quadrant represents restored status while the red quadrant represents a state of overfishing and depleted biomass. The use of these presentations has become a gold standard in fisheries management monitoring and evaluation techniques. The graphic shows the gradual progression from 1990s sustainable fishing levels to the point in 2004 when the fishery became both overfished and where overfishing was also occurring, an unsustainable status for the fishery and where stocks reached their lowest level in 2019’

Following the approval of the Co-Management Policy for the Fisheries Sector in December of 2020, which mandates the Fisheries Commission to establish a Science and Technical Committee (STC) to act as an advisory panel to the Commission and its Co-Management Committees, it can be concluded that SFMP’s recommendation of institutionalizing the STWG or STC can now be realized as the policy is implemented.



**Figure 5: Kobe plot (control rule) showing the trends of the relationship between biomass and fishing mortality over time for Ghana’s small pelagic fishery**

## 2.2. Improving Fisheries Commission Data Systems and Stock Assessment Capacity

The SFMP identified key areas requiring improvements in stock assessment, and use of information technology, statistics and data management as key areas of improvement for the FSSD. The Division was managing large databases on marine fisheries production and oceanography. Data was collected by field enumerators on paper forms at selected landing sites and submitted to zonal officers for review and subsequent submission to FSSD headquarters through regional offices. Data and reports received undergo data editing and entry into specialized computer programs developed by FAO called *ArtFish* for analysis. The quality of the data eventually captured into the *ArtFish Application* was poor as a result of the paper-based on which data was captured. There was usually a long-time lag between data collection,

entry, compilation and analysis to generate information for decision-makers. The SFMP addressed this issue via a series of training events for FSSD staff in fisheries statistics, stock assessment, networking, database management, data entry and analysis, data collection using mobile technologies and fisheries management techniques. In addition, SFMP provided the FSSD with sampling material and computer equipment, servers, tablets, smartphones, printers, and office furniture to complement the resources provided through the WARFP and the Fisheries Commission.

To make further improvements in the data collection program, SFMP partnered with the WARFP, the FAO, and the Fishery Committee of the West Central Gulf of Guinea (FCWC) to develop a catch documentation mobile device application for FSSD that was compatible with smart phones and tablets. The application was developed on an Android platform for smartphones and tablets using the Open Data Kit (ODK). This initiative was piloted at fourteen landings sites and SFMP provided smartphones and training on the application to facilitate mobile data collection.

Despite some challenges in funding the data uploads from the field, the pilot initiative on mobile data collection highlighted numerous advantages over the previous paper-based process. Digital data collection substantially reduced the time and cost of data entry and submission. Initial problems were encountered by the Fisheries Commission in paying enumerators for data plans for the smartphones used for data collection. However, the concept proved to be relevant and valid and the SFMP pilot was later expanded with the support of WARFP to include 42 landing sites. The SFMP contributed considerably to updating the FSSD with modern information and technology equipment and building capacity of staff to position the Division to perform its functions of generating scientific data and information to inform policy formulation and management decision making.

### **2.3 Technology Innovations and Capacity Building for Effective Fisheries Management and Coastal Planning**

A GIS initiative was implemented by SFMP in collaboration with USAID's Coastal Sustainable Landscapes Project (CSLP), and UCC-CCM, and the UCC Department of Geography and Regional Planning. Trainings were conducted for district and regional planners in the Western and Central Regions in the use of advanced planning tools and state-of-the-art equipment. This created a network of expertise that aided the districts assemblies in coastal spatial planning processes and facilitated the design of related projects by the World Bank and European Union. This broad collaboration also supported responses to challenges including storm-related damage to fish landing sites and communities such as Sanwoma at the estuary of the Ankobra River and Anlo Beach at the estuary of the Pra River where fish-processing facilities and ovens were damaged during "tidal wave" events.

In 2016, the SFMP undertook refurbishment of a training facility at the Central Region Town and Country Planning office (now the Land Use and Spatial Planning Authority-LUSPA) located in Cape Coast. The refurbishment works included fixing of new doors, burglar proof systems, new lighting, air condition systems and floor tiles. Furniture and computers for training up to 16 persons per session were also provided. In addition, a LAN system was installed (Figure 6). The National Director of Land Use and Spatial Planning (formerly the Town and Country Planning Department-TCPD) stated that the USAID investment in the regional GIS Data Hub was not only supporting better planning in coastal areas, but also facilitated the work of other agencies in need of spatial planning and mapping services, including the Lands Commission and the Ministry of Agriculture. He indicated that the facility was going to serve as a spatial mapping and service center for the entire region.



**Figure 6: GIS training for Town and Country Planning Department personnel in the Western Region.**

SFMP created an Integrated Coastal Management (ICM) toolkit in collaboration with the Central Region LUSPA. Key products developed include [Developing Capacity in Spatial Planning](#) and [A Planners' Guide to Integrated Coastal Management in the Central Region of Ghana](#). While the LUSPA does not have direct fisheries management responsibilities, it was able to strengthen its capacity to regulate coastal development, road networks, and other physical infrastructure development that can have significant impacts on the socioeconomic development of artisanal fishing communities.

SFMP piloted the use of small unmanned aerial vehicles (UAVs) as a cost-effective coastal spatial data collection tool and transferred the ability for this technology to be used in Ghana. SFMP worked with the Ghana Civil Aviation Authority (GCAA) to ensure all activities satisfied existing UAV permitting and operating requirements within Ghana. Case studies were developed for coastal inundation and shoreline change (Ankobra), mangrove identification and delineation (Kakum estuary), and fisheries landing site vulnerability (Axim).

The SFMP UAV activities conducted in collaboration with LUSPA and UCC provided baseline image surveys for 22 discrete locations, resulting in 327,442 images covering 125 km<sup>2</sup>. All imagery (raw and processed) were provided to project collaborators and stakeholders. In addition, image mosaics have been made available free of charge to view or download through the SFMP Online Map and Data Center (<http://tinyurl.com/sfmpdata>). Four individuals from UCC have taken the GCAA certification exam and obtained RPAS Operator Certificates. UCC continues to utilize UAV capabilities for research and planning. For example, at the onset of the COVID-19 pandemic, UCC initiated a study on physical distancing in fish landing sites and markets, relying on UAV imagery collected with UCC's DJI Phantom 4 UAV, a quadcopter to assess crowding. SFMP provided partial support for this study and the research was published in December 2020 in Scientific Reports, Nature Sustainability [Journal](#). ([Physical](#)

[Distancing and Risk of COVID-19 in Small-Scale Fisheries: a Remote Sensing Assessment in Coastal Ghana](#)).

## **2.4 Collaboration and Capacity Development of UCC/DFAS/CCM**

SFMP partnered with UCC and its Department of Fisheries and Aquatic Sciences (DFAS) to operationalize their vision for setting up the Center for Coastal Management (CCM). The SFMP supported the CCM in the implementation of the Center's Fisheries and Coastal Management and Capacity Building Project funded by the USAID. The support and capacity building provided by the SFMP made it possible for the CCM to strengthen its internal processes and structures and also expanded its network. This made it possible for the World Bank to recognize and select the CCM as one of the five new centers of excellence under the World Bank's African Center of Excellence Program, in the thematic area of Coastal Resilience (ACECoR). Sustaining and building on USAID/Ghana's investment, UCC received \$5.8 million from the World Bank to expand its capacity building programs, train graduate and post-graduate students, provide technical and professional training, and increase fisheries and coastal policy engagement.

Working with the UCC Centre for Coastal Management, SFMP supported the development of short courses in fisheries management, integrated coastal management, Geographic Information Systems (GIS), and climate change through faculty exchanges between URI and UCC. As a result, UCC developed fee-based short courses on a regular basis, targeting government institutions, the fishing industry, NGOs and other public institutions. PhD candidates and researchers affiliated to the Centre for Coastal Management have played integral roles in local fisheries co-management planning processes in the Pra, Ankobra and Densu estuaries. Supported by SFMP, researchers from CCM trained and empowered fishers in basic data collection on water quality, biology and fisheries production for their own local knowledge and adaptive decision-making. Citizen science in this context facilitated collaboration between fishers, students, and faculty researchers to find solutions to local overfishing and habitat degradation problems. The SFMP report on organizational capacity development outcomes noted that the focus of UCC/DFAS was previously on fisheries and biological science. However, with SFMP support, DFAS has included in its scope of academic programs and research, engagement with local communities and demand driven research. Every student now has a project outside of the campus rather than being limited to working in a laboratory or doing document research as was often the case previously.

SFMP provided technical training and equipment support for UCC/DFAS fisheries age and growth laboratory which is now used for determining the age of fish through reading scales and otoliths. The information is used by student researchers and FSSD for stock assessment and fisheries management purposes. The first two Ph.D. dissertations facilitated through the availability of the equipment were defended in May 2019.

The collaboration between URI and UCC/DFAS, facilitated by SFMP, also led to the genetic analysis of the *Sardinella* species to help address issues related to regional cooperation and needs for transboundary fish stocks management and policy development. The genetic study of small pelagic fish stocks in West Africa was led by a Ghanaian graduate student, Evelyn Takyi, from the University of Cape Coast, as part of her master's degree in Biological Sciences at the College of Environment and Life Sciences of the University of Rhode Island. This involved collaboration with fisheries research institutes from twelve countries between Morocco and Angola. The study also included the Norwegian EAF Nansen project and the Food and Agriculture Organization. The purpose of the study was to improve the understanding of stock units and establish, if possible, the boundaries of genetically isolated populations along the Atlantic African coast as a contribution to regional harmonization of fisheries management

of key stocks. The findings of this research suggested that the stocks of two sardinella species (*Sardinella aurita* and *Sardinella maderensis*) are not separate within the Gulf of Guinea, reinforcing the fundamental need for regional cooperation on fisheries management, and promotion of conservation of shared fisheries resources under the auspices of FCWC. SFMP supported higher education opportunities for 32 individuals (17 male, 15 female) over the duration of the project. This included 4 master’s graduates and one PhD at URI all of whom are in Ghana working with academic institutions or in the Fisheries Commission.

To consolidate capacity development of UCC/DFAS/CCM and fostering of collaboration between UCC and URI through the facilitation of the SFMP, an agreement for a dual graduate degree program was signed between the University of Rhode Island’s College of Environment and Life Sciences and the University of Cape Coast, Department of Fisheries and Aquatic Sciences (UCC/DFAS) in 2019. This has fostered collaboration between the two universities beyond SFMP. Students from the U.S. and Ghana have the opportunity to simultaneously pursue a dual PhD degree in biological and environmental science from UCC and URI.

### **IR 3: Creating Constituencies and Stakeholder Engagement**

The SFMP developed and implemented an integrated communication strategy to facilitate engagement of fisheries stakeholders and elevate their voices and views into national discussions on fisheries policy and management at all levels. Expected versus actual results are summarized in Table 4 below.

**Table 4: IR 3 – Expected versus actual results for creating constituencies.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• Under-represented groups engaged in decision-making, promoting responsible practices.</li> <li>• Active support for policies and stakeholder behaviors consistent with best practices and legal requirements for responsible fishing.</li> <li>• Active participation by stakeholder organizations throughout policy development and management planning processes.</li> </ul>	<ul style="list-style-type: none"> <li>• Widespread support and compliance with the first artisanal closed season in 2019.</li> <li>• Widespread support for the fisheries co-management policy and for a moratorium on numbers of canoes to be registered.</li> <li>• Fisher-to-Fisher platform mainstreamed by MOFAD/FC allows all voices in the industry to be heard and established an on-going arena for dialogue between government and fisheries stakeholders, including men and women.</li> </ul>

SFMP developed a comprehensive Communication Strategy with clear identification of target audience groups and communication channels and approaches to transmit specific messages to intended audiences. The SFMP external communications ensured that relevant stakeholders and user groups participated actively in policy development and management processes at all levels. Strategically, the SFMP external communications were divided into three broad categories: policy maker communications; national and regional level policy campaigns; and communications with specific target groups including fisheries managers, fishers, the media and general public. The progress made under each of these categories is described below.

A series of communications campaigns to support of MOFAD/FC initiatives to create awareness on the National Fisheries Management Plan and modalities for its implementation,

were started in Year 2 following the development of a communications outreach strategy. This was conducted jointly with MOFAD/FC staff using the Ministry’s mobile communications vans donated by WARFP. The use of entertainment-education media such as drama and audio-visuals proved very effective in this regard. The project also collaborated with NGOs operating in fisheries to embark on outreach and campaign against IUU fishing. SFMP in Year 6 supported a coalition of NGOs including the Environmental Justice Foundation, Hen Mpoano, Friends of the Nation, Care International in Ghana, Oxfam in Ghana, Livestock and Fisheries Chamber, and Cerath Development Organization to intensify advocacy and campaign against illegal “*saiko*” fishing. SFMP also supported three regional stakeholder workshops in partnership with the two EU funded fisheries projects, to raise awareness on the detrimental practice of *saiko* fishing and devise strategies to end *saiko*-fishing.

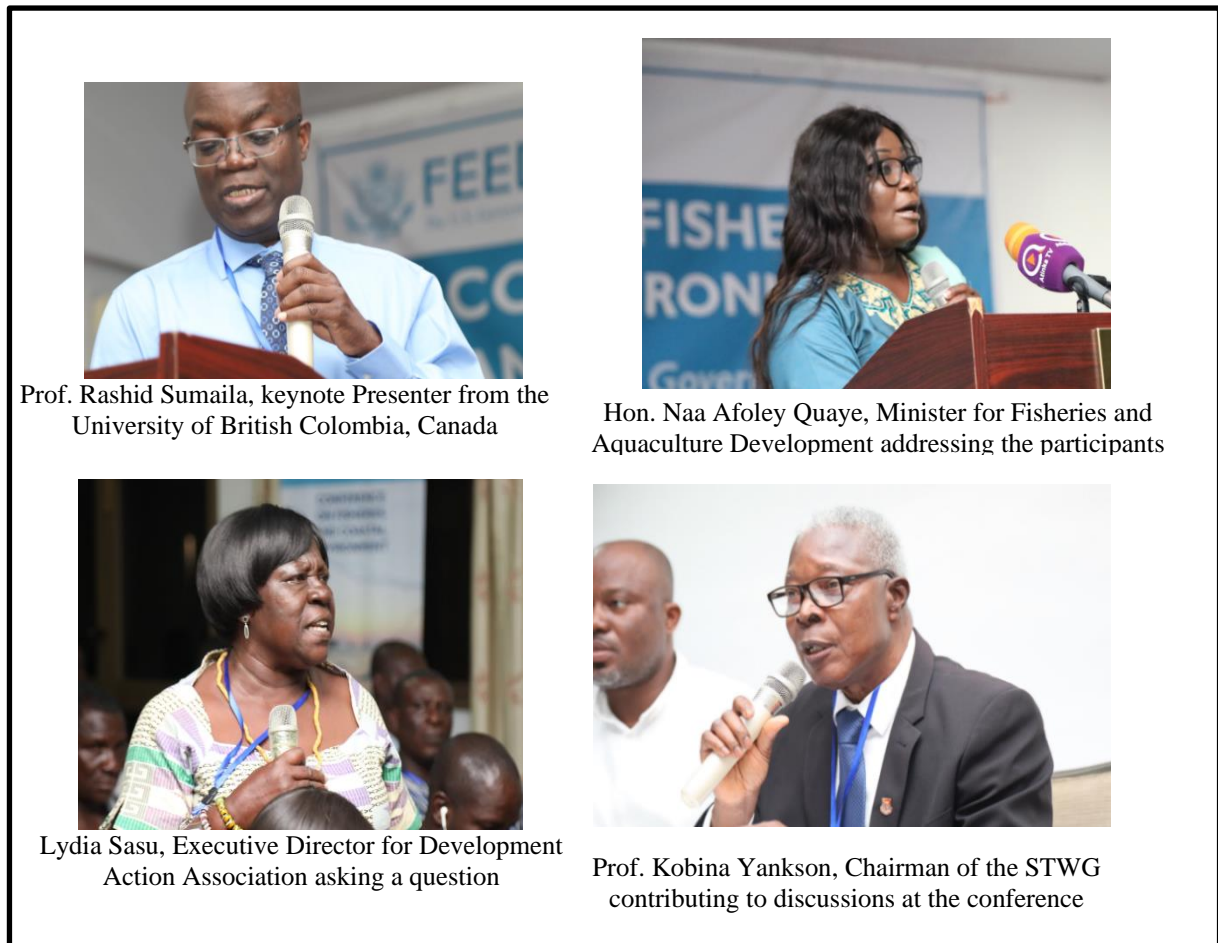
SFMP support provided to the Fisheries Commission for education and awareness creation on the 2019 fisheries closed season was instrumental for the success of this first national closed season for the artisanal sector. Support included t-shirts, posters, production of jingles, airtime on major radio stations across the four coastal regions and community and regional “*durbars*”. SFMP also supported MOFAD/FC to engage the services of a Ghanaian musician, Kofi Kinaata, to compose an anthem to promote the enforcement and adherence to the fisheries closed season for the artisanal and inshore fleet. The anthem titled “illegal fishing during closed season” raised awareness on the importance of the fishing closed season and facilitated compliance by all fisher folk. It has over 1.5 million hits on You-Tube. (<https://www.youtube.com/watch?v=rwM9JDLss0U>) as of June 20, 2021. Just recently, he was received the Vodafone [green award](#) for this song. Throughout the project implementation period, the SFMP used the celebration of national and global events to undertake awareness and advocacy campaigns highlighting challenges within the fisheries sector to advance national agenda setting. These public events include World Rural Women’s’ Day, World Day against Child Labor, World Oceans Day, and World Fisheries Day.

The SFMP organized various national and regional level policy campaigns for the realization of specific objectives in support of the overall project goal. In 2015, the SFMP organized a three-day National Dialogue on fisheries to crystalize the key issues and challenges confronting the sector and synthesize the policy actions required to move the sector forward. The Minister, the Chairman of the Parliamentary Select Committee for Food, Agriculture and Cocoa Affairs, under which fisheries falls, and three other coastal MPs participated. In 2016, SFMP facilitated a meeting with the Parliamentary Select Committee on Food, Agriculture and Cocoa Affairs to deliberate on critical issues in the fishery sector, and the path to recovery for depleted fish stocks through the implementation of management measures in the NMFMP as approved by Parliament in 2015.

The SFMP in collaboration with UCC-CCM/DFAS and MOFAD organized two national conferences on fisheries and the coastal environment in September 2015 and August 2019. The initiatives were designed to strengthen policy linkages and foster greater collaboration among stakeholders including researchers, journalists, and think tanks and connect their voices to the sustainable fisheries and coastal development agenda of Ghana. The conferences provided a forum to highlight achievements, challenges, opportunities, and lessons learned, in fisheries and coastal management in Ghana. The Conferences attracted several hundred participants representing a diversity of stakeholders from all coastal regions of Ghana and influential personalities from Ghana and beyond. The 2019 conference (Figure 7) concluded with a ‘Communique’ by conference participants that highlights key challenges in the sector and recommendations for addressing them. The communique was subsequently finalized, approved by the Minister, and published in print and electronic media ([COMMUNIQUE from the Conference on Fisheries and Coastal Environment, Accra, 2017](#)). The communique recognized

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the national importance of marine and coastal ecosystems and fisheries to the people of Ghana, emphasized that the fish stocks were at an alarming stage of decline and on the verge of collapse, and argued for more inclusive decision making.



**Figure 7: Photos of some key personalities at the 2nd National Conference on Fisheries and the Coastal Environment, August 2019**

The SFMP collaborated with UCC/CCM to organize an engagement with political parties on fisheries and coastal issues under the theme, “Towards 2020 National Elections: Town Hall Engagement with Political Parties on Fisheries and Coastal Management Challenges in Ghana” held on the September 22, 2020 at the Accra Metropolitan Assembly Conference Hall.

The event was broadcast live on television and radio networks with national coverage and online to viewers across the world. The rationale behind the event was to highlight the critical challenges the fisheries and coastal sectors face and advocate for high-level political commitments to reform the sector. The key issues discussed by the political party representatives were the issues highlighted in the 2019 National Conference on Fisheries and the Coastal Environment Communique. Figure 8 shows a cross-section of political parties participating in the program.





Registrar of the University of Cape Coast, reading the UCC Vice Chancellor's opening remarks



A fish processor and member of NAFPTA asking representatives of political parties a question



Representative of the PNC, Bernard Mornah, speaking on his party's perspective



Representative of the NPP and Honorable Deputy Minister for Fisheries and Aquaculture Development, Francis Kingsley Ato Cudjoe, speaking on his party's perspective



Representative of the NDC and former honorable Minister for Fisheries and Aquaculture Development, Hon. Sherry Ayittey, speaking



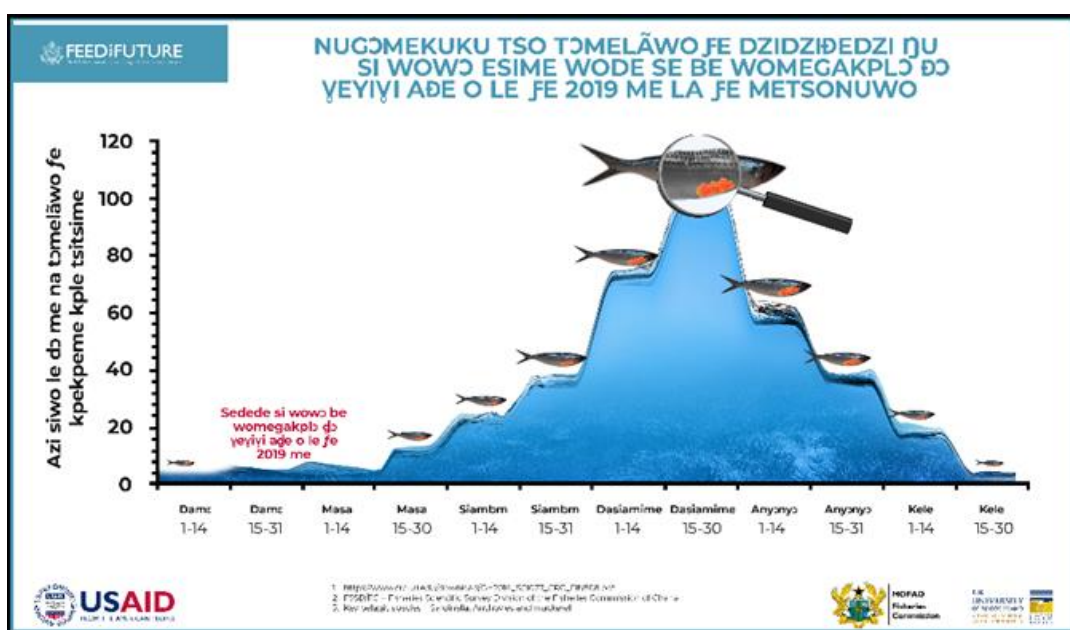
Representative of the CPP, Kofi Osei Acquah, speaking on his party's policy perspective

**Figure 8: A cross-section of political representatives participating in the engagement of political parties on Fisheries and Coastal Management Challenges in Ghana on September 22, 2020.**

The SFMP continued to engage policy makers throughout the project in connection with developing new policies for the sector and leveraging the influence of policy makers for effective implementation of existing policy and legal instruments. SFMP policy maker communications contributed to the development and approval of the National Co-Management Policy for the fisheries sector in Ghana in November 2020, approval to proceed with

developing a new Fisheries Act, as well as high level support and understanding for fisheries closed seasons as well as moving forward with canoe registration as a first step towards managed access.

The SFMP developed Information, Education and Communication (IEC) materials and innovative communication approaches in order to advance behavioral change communication targeting specific audiences to influence stakeholders to support measures to address challenges within the sector and facilitate the implementation of the National Marine Fisheries Management Plan and post-harvest programs. IEC materials and approaches included: brochures and report summaries, success stories, radio talk shows, press releases, news items, community dramas, and fact sheets. Figure 9 shows one IEC material, an infographic presenting results from biological monitoring of the 2019 fisheries closed season, in Ewe to target fishers in the Volta Region.



**Figure 9: Ewe version of the infographic to communicate results of the 2019 fisheries closed season biological monitoring.**

The SFMP used various channels and innovative approaches to engage and communicate with target groups, including the use of competition on desired behavioral changes and practices and technology platforms such as ‘M-notify’, an internet-based messaging and communication platform, capable of reaching more than two hundred stakeholders through regular broadcast of messages on key fisheries issues by SMS and voice in English and local languages. The SFMP also used CiviCRM database to collate information about fisheries stakeholders to facilitate mass messaging and dissemination of information.

The SFMP innovative approach of Fisher-to-Fisher dialogues (F2F) proved to be the most effective approach and channel for engaging and discussing fisheries issues and building constituencies and political will towards paradigm shift in the direction of sustainable fisheries management in Ghana. The F2F dialogues initiated in 2017 focused on key issues and actions to address the collapse of the fishery. Priorities included a closed season during the spawning season, and the need to place a moratorium on the number of canoes to address overcapacity with canoe registration as a first step in that process.



**Figure 10: Scenes from the closing ceremony of the 2019 closed season for artisanal fishers.**

These dialogues provided a platform for fisherfolks, not just the fisheries elites of chief fishermen or canoe owners, but all participants in the sector including crew, women processors and traders.

In year 5, F2F dialogues gained ground when it was included in the MOFAD's 2019 budget. This gave a clear indication of government's appreciation of the F2F platform and its role in facilitating engagement of fishers in policy formulation and implementation. Not only did MOFAD/FC participate in the preparatory meetings that preceded the district level F2F events, but also showed greater commitment throughout the dialogue processes with the stakeholders. With SFMP support, MOFAD/FC took the initiative to train all 48 regional directors, relevant divisional heads and all zonal officers on their role in conducting F2F events. They also emphasized and demonstrated how to effectively increase collaboration with the Ghana National Canoe Fishermen's Council (GNCFC) and the National Fish Processors and Traders Association (NAFPTA) to make F2F meetings successful. SFMP supported 18 clustered

community level F2F dialogues focusing on measures outlined in the National Fisheries Management Plan (2015 – 2019).

Through its partners, the project assisted the GNCFC and MOFAD/FC to mobilize their stakeholders as well as guide the chief fishermen to facilitate each dialogue. Even during the COVID-19 period, MOFAD/FC and the key stakeholders within the fisheries sector including GNCFC and NAFPTA found it necessary to use the F2F as the platform for engaging fishers while observing the necessary COVID-19 safety and prevention protocols. Figure 11 shows a 2019 F2F session. The F2F also created the platform to advance the discourse on prevention of child labor and trafficking within the fisheries sector in Ghana



**Figure 11: A picture showing western regional director of the Fisheries Commission, Mr. Tsibu, interacting with a cross-section of participants at the Axim F2F meeting.**

#### **IR 4: Applied Management**

The SFMP implemented applied management initiatives for targeted fisheries. These included resource management initiatives as well as initiatives targeting post-harvest improvements and access to finance. Expected versus actual results are summarized in Table 5 below.

**Table 5. IR 4 – Expected versus actual results for applied management.**

Expected Results	Actual Results
<b>Resource Management</b>	
<ul style="list-style-type: none"> <li>• Four fisheries management plans developed and/or adopted and implemented at different ecosystem scales</li> <li>• Several fishing communities more resilient to climate impacts</li> </ul>	<ul style="list-style-type: none"> <li>• National Marine Fisheries Management Plan 2015 – 2019 key actions on closed fishing seasons implemented successfully.</li> <li>• 2019 coast-wide 1 month closed season.</li> <li>• 10,314 canoes registered and Canoe Identification Cards issued as the first step towards moving the artisanal sector from open to regulated access.</li> <li>• Canoe Identification Software Application that links Canoe Identification Cards to the Vessel Register and Law Enforcement records.</li> <li>• Three community-based fisheries management plans provide fisheries use rights to men and women involved in the fishery.</li> <li>• Three coastal community resilience and vulnerability assessments conducted.</li> <li>• 622,714 hectares of estuarine and marine biologically significant areas are under improved natural resource management.</li> <li>• 108,856 producers are applying improved management practices.</li> <li>• Key measures in the community-based management plans implemented – mangrove reforestation and annual closed seasons over 3 consecutive years.</li> <li>• Coastal districts in the Central Region proposed a collective budget allocation of GHS 4.5 million over five-years in their Medium-Term Development Plans (MTDP 2018-2021) to address CLaT issues.</li> </ul>
<b>Post-Harvest and Finance</b>	
<ul style="list-style-type: none"> <li>• 13,338 members of producer organizations and community-based organizations receiving USG assistance.</li> <li>• US\$ 87,029 of agriculture-related financing accessed as a result of USG assistance.</li> <li>• 3857 micro, small and medium enterprises (MSMEs), including farmers, receiving business</li> </ul>	<ul style="list-style-type: none"> <li>• 17,975 members of producer organizations and community-based organizations receiving USG assistance.</li> <li>• US\$92,876 of agriculture-related financing accessed as a result of USG assistance.</li> <li>• 6062 micro, small and medium enterprises (MSMEs), including farmers, receiving business development services from USG assisted sources.</li> <li>• 401 individuals participating in USG-assisted group-based savings, micro-finance or lending programs</li> </ul>

<p>development services from USG assisted sources.</p> <ul style="list-style-type: none"> <li>• 375 individuals participating in USG-assisted group-based savings, micro-finance or lending programs.</li> </ul>	<ul style="list-style-type: none"> <li>• 723 new technology - low fuel and low PAH “Ahotor” fish smokers - constructed along the coast.</li> <li>• 1195 persons (1075 women) build skills in hygienic fish handling practices that reduce microbial contamination during processing via training.</li> <li>• 28 fish processing kitchens Class 1 Certified.</li> </ul>
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#### 4.1 Implementation of the NMFMP

Efforts have been made to put in place management plans to end overfishing and assure sustainable utilization of marine resources in Ghana. For instance, Ghana developed a [National Fisheries Management Plan \(NMFMP\)](#), (2015-2019) in response to a threatened imposition of a ban on export of fish and fishery products to the EU market (Yellow Card) by the EU with a scope covering all vessels fishing in the marine waters of Ghana and Ghanaian flagged vessels wherever they were fishing. The NMFMP set out a formal management strategy and provided a five-year road map to restore marine fish populations just as the SFMP started in November 2014. This provided SFMP an opportunity to support the implementation of the NMFMP.

The goal of the NMFMP (2015 – 2019) was to rebuild fish stocks, enhance the socio-economic conditions of fishing communities, create employment, improve food security as well as contribute to GDP and foreign exchange earnings of the country. SFMP assisted the Fisheries Commission with implementation. This included dialogues with fisheries stakeholders to crystallize actions on the key issues that required attention in order to achieve the goal and the strategic objectives of the NMFMP.

In line with the NMFMP requirement that an annual Operational Plan be developed to facilitate implementation, the SFMP during the second year of the project, facilitated establishment of an interim Fisheries Management Operational Committee (FMOC) in anticipation of formalization of the membership by the Minister of MOFAD. The interim committee was nominated by the Director of the FC and the SFMP’s Senior Fisheries Advisor was a member of the Committee. The FMOC was tasked with drafting a monitoring and evaluation plan for the NMFMP and providing guidance and recommendations on the implementation schedule. Unfortunately, the interim FMOC was never formalized. That represented critical weakness in implementation of the NMFMP and, in retrospect, partly explains the shortfalls in the achievement of the main goal of the NMFMP and the SFMP.

The plan included a closed season for the industrial trawlers as an effort control measure (The SFMP focused on near-shore artisanal small-scale pelagic fisheries, not commercial trawling however.). Three closed fishing periods for commercial trawlers were implemented, November 2016, February-March 2017, and January-February 2018. For the marine artisanal canoe fishery, the first seasonal closure was May 15-June 15, 2019. While the timing of the 2019 closed season for the artisanal sector lacked a scientific basis, this has been corrected with the declaration of the 2021 closed season to be for the month of July. The high rates of compliance with these closed seasons for all sectors was a rare instance in Ghana as many fisheries regulations are routinely ignored by fisherfolk. This successful result can be attributed to the SFMP communications campaigns and dialogues as well as the scientific justification provided.

The SFMP conceptualized the Canoe Identification Cards (CICs) system as an instrument for moving the marine artisanal fisheries sector from open access to regulated access as the first step in reducing fishing effort and vessel capacity within the sub-sector. The concept of the

CIC is to register all of the marine canoe fleet, cap and ultimately reduce marine canoe fleet numbers and its associated fishing effort. SFMP supported MOFAD/FC to complete a national registry of all canoes, capturing the details of canoes including name, gear type, landing beach, owners and canoe captains, transferred onto the CICs. The SFMP worked with the FC and the GNCFC to design the registration cards and print the first batch of 10,134 (see Figure 12). The SFMP also supported development of a software application to link the CICs and the Canoe Register for regulatory compliance and enhancement of monitoring, control and surveillance activities of the Fisheries Commission. The SFMP provided 20 Android Tablets and facilitated the training of the Fisheries Enforcement Unit and Fisheries Commission staff on use of the software application installed on the tablets.



**Figure 12: The Canoe Identification Card design. Left: Front view, Right: Back view.**

With the CIC system in place, the next action needed is the imposition of a moratorium on new entrants into the sector by MOFAD/FC through collaboration and engagement of the GNCFC. Following approval of the Co-Management Policy, the FC was in the process of rolling out the CIC system through active engagement with GNCFC as an example of the collaborative management arrangements. Under this collaborative arrangement, designated officials of both the FC and the GNCFC have login access into the CIC system to review and update fisheries management information based on the level of responsibility imposed on the group (institution). This arrangement improves transparency and enables both the FC and GNCFC to be custodians of the agreed number of canoes operating at the various lading beaches through self-regulation and monitoring.

#### **4.2 Piloting Community-based Management Approaches**

SFMP supported the development, adoption and implementation of three community-based fishery management plans in three estuaries along the coast; the Ankobra, Pra and Densu estuaries. All three plans followed a parallel process of development, with a local NGO facilitating planning processes with local fisherfolk, local government and the local representatives of the Fisheries Commission. SFMP NGO partners assisted fisherfolk to form a duly registered fisheries association that was granted exclusive use rights to specific priority species in a designated area. These were done in parallel with support for developing the national co-management policy. Once the policy was approved, the Fisheries Commission used its delegated authorities to approve these plans in late 2020. Implementation was already on going for several years prior to formal approval with main actions being mangrove reforestation of degraded areas of the estuary, establishment of annual closed seasons, and minimum harvesting sizes for species of concern. These small-scale co-management initiatives provided an example that helped build support for the nationwide seasonal closure for the marine sector. In addition, in the process of developing the community-based plans, lessons learned were

incorporated into drafts of the co-management policy, strengthening the framework through on-the-ground -testing. These are also important models as the national co-management policy calls for different co-management arrangements for large scale fisheries (small pelagics) versus small-scale fisheries (estuaries).

Short descriptions are provided below for each of these three community-based management plans.

The [Ankobra Estuary Community-Based Fisheries Management Plan, Western Region, Ghana](#) was prepared with the guidance of Hen Mpoano, a non-governmental organization based in Takoradi. The objective of this community-based fisheries management plan is to ensure sustainable management of the Ankobra River Estuarine fishery located in the Western Region for improved food security and livelihood benefits. The Ankobra estuarine fishery is a multi-species fishery characterized by harvesting of finfish and shellfish from freshwater, brackishwater and marine sources. A total of 27 fish species belonging to 21 families are caught. While a variety of species are caught, estuarine fishers and processors prioritized three species to be the main focus of the management plan according to the following criteria: availability for harvesting throughout the year, high abundance and high post-harvest price.

The [Pra Estuary Community-Based Fisheries Management Plan, Western Region, Ghana](#) was guided by the Friends of the Nation. This co-management plan is designed for management of the fishery in the Pra Estuary located in the Shama District of the Western Region of Ghana. The Pra estuary is a multi-species fishery. Out of 32 species identified, the Black-Chinned Tilapia *Sarotherodon melanotheron* was prioritized by stakeholders due to its economic importance. Within the fishery management area, fishers have identified seven areas where the Tilapia usually spawn/breed and established several closed areas.

The development of the [Densu Estuary Community-Based Fisheries Management Plan, Greater Accra Region, Ghana](#) was guided by the Development Action Association along with technical assistance from the University of Cape Coast. It builds on the best practices and lessons learned from the 10-day Regional Study Tour on Women's Empowerment and Post-Harvest Improvements in the Gambia and Senegal in 2016 involving 11 members of five women-led Civil Society Organizations (CSOs) and the Fisheries Commission and supported by SFMP. The successes of TRY Oyster Women's Association, a peer woman-based organization in the Gambia that developed successful community-based strategies for sustainable oyster and cockle fisheries management and value chain improvements, led to a realization that similar management practices could be implemented for the oyster fishery in the Densu estuary. The Densu estuary was designated as a RAMSAR site in 1992, recognizing it as a protected wetland of international importance under the International Convention on Wetlands. The objective of this Community-Based Management Plan is to ensure sustainable management of the Densu oyster fishery for improved food security and other benefits, especially for women oyster harvesters who depend on this fishery for their livelihood. Unique to this plan and fishery is that it is predominantly women harvesters, and the Densu Oyster Pickers Association have been provided use rights to this fishery representing a great leap forward for empowering women in resource management in Ghana.

#### **4.3 Post Harvest Improvements**

SFMP activities on improving post-harvest value chain activities were focused on reducing losses and increasing the value of processed fish. It was estimated by the FAO that as much as 20% of fish harvested is lost along the post-harvest value chain before fish gets to the final consumer. Initial efforts on improving post-harvest value chain activities were led by SNV in collaboration with local implementing partners (DAA, CEWEFIA and DAASGIFT) to take stock of existing knowledge on post-harvest processing in Ghana and identify appropriate

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technology for reducing loss and improving the value of the processed fish. The first fish smoking technology slated for adoption and support was the “Morrison” fish smoker. However, early on it was discovered that the “Morrison fish Smoker” produced unsafe levels of polycyclic aromatic hydrocarbons (PAH), a human carcinogen. Hence, the SFMP embarked on the search for a better technology and financing options.

Although this search for the appropriate technology for fish smoking took close to two years as a result of the need for a new engineering design and testing, the resulting new technology, the *Ahotor (comfort)* stove, proved to be safer, more efficient, and more acceptable to many fish processors. ([Ahotor Oven Construction Manual](#), [Ahotor Oven Users Guide](#)). Over the course of its implementation, the SFMP made considerable progress in standardization of fish processing using the *Ahotor (comfort)* stove to the extent that a certification scheme referred to as Class 1 Recognition Scheme was developed in collaboration with the Fisheries Commission, Ghana Standards Authority and the Food and Drugs Authority.

Initial adoption of the *Ahotor* oven was low. As of January 2018, only 113 ovens had been constructed, including 74 built with full cost covered by the project. At that time, it cost GHS 1,768 (US\$ 354) for a double unit and GHS 903 (US\$ 181) for a single unit (without trays). As a result, fish processors perceived the *Ahotor* to be expensive relative to the commonly used *Chorkor* oven. In response to unsatisfactory initial results, the project redoubled its efforts to expand processors’ access to credit, and progressively increased subsidies, while also dramatically expanding the ranks of qualified *Ahotor* artisans living directly in fishing communities in an effort to reduce costs. Through consortium member Resonance, the project brought a Market Development Specialist on board to strengthen the activities related to business planning, market development, and financing for the *Ahotor* oven.

Ongoing market development activities and outreach led the Fisheries Commission Post-Harvest Unit to adopt and promote the *Ahotor* oven design. With funding from the WARFP, the Fisheries Commission constructed 400 *Ahotor* ovens. All the ovens installed are individually owned, as communal ownership of ovens is not a traditionally acceptable practice. In addition, SFMP collaborated with the Microfinance and Small Loans Centre (MASLOC) to pilot loans to fish processors for the installation of additional *Ahotor* ovens. MASLOC approved and granted loans to over 100 fish processors at GHS 1000 per person, but the amount disbursed was not enough to construct the oven, and many recipients used the loans to cover other operating expenses. Although all recipients paid their MASLOC loans in full, it remains uncertain whether scale-up of this loan program will be possible in the future due to perceived risk by financing institutions casting doubt on this as a financing option.

Table 6 shows the number of improved fish smoking ovens produced and installed as a result of SFMP’s market development activities and oven construction supported by the Fisheries Commission. Initially, SFMP projected a need for 6,000 new ovens to be constructed (replacing approximately 20% of the total artisanal smoking ovens along the coast) for diffusion of the technology to reach critical mass and for auto-diffusion to take off without the need for widespread external support

Despite the clear health and environmental benefits, the strong economic potential of the *Ahotor*, as well as its promotion by the Fisheries Commission, achieving the critical mass of early adopters required to drive diffusion of the technology has been elusive. The cost of scale-up which may need to rely on heavy subsidies initially was greater than expected. Ultimately, only 8% of *Ahotor* ovens (59 of 723) were constructed without a subsidy of 88% or more of the full cost being borne by SFMP or the FC.

**Table 6: Ahotor ovens built as of March 31, 2021 by funding mechanism.**

<b>Funding Mechanism</b>	<b>Number Built</b>
Initial R&D, demonstration and training (project covered 100%)	58
Households vulnerable to child labor & trafficking (project covered 100%)	16
30% discount for the first 200 early adopters and/or with credit obtained from one of the three partner financial institutions.	42
Class 1 Certification scheme (project covered 100%)	15
50% discount to replace higher PAH Morrison stoves built during the early stages of the project by processors with their own funding and/or credit from financial institutions.	34
SFMP 88% cost covered for double oven (excluding cost of one fat collector)	141
<b>Total SFMP</b>	<b>306</b>
FISHERIES COMMISSION 88% cost covered for double oven (excluding cost of one fat collector)	400
Demand from aquaculture farmers	17
<b>TOTAL</b>	<b>723</b>

SFMP also promoted improved hygiene and handling practices. These included training fish traders and processors on food safety and hygiene practices, building local capacity to continue providing such trainings, and developing a formal food safety certification scheme specifically for artisanal fish processors to incentivize adherence to good hygiene and handling practices. SFMP trained 1,195 persons (120 men, 1075 women) in hygienic fish handling practices that reduce microbial contamination during processing. Training emphasized the need to put fish on ice after harvest and using clean/potable water to wash fish before processing.

To build local capacity to provide training on hygiene and handling for fish processors, SFMP supported construction of two model processing and training centers to be operated by local partners. The DAA (Greater Accra Region) and CEWEFIA (Central Region) training and production centers were inaugurated in 2018. to train their members and others on how to process higher quality fish, on use of the *Ahotor* smoker, and how to produce, package, and sell fish acceptable to more formal markets such as domestic supermarkets and international export markets. These two food safety-compliant processing centers are an important step towards the promotion and local trade of quality fish in Ghana. Combined have the capacity to train 3,500 women each year.

They trained 696 participants on hygienic fish handling and processing, produced 3,313 kg of their own branded fish products, and supported production of 428 kg (Tuna, mackerel, Sardinella, shrimp, and oysters) for fee paying users of their facilities. While the volume of production to date is small, it is expected to grow as business plans developed with project support begin to guide the operations of these centers.

Additionally, SFMP developed a formal food safety certification scheme for artisanal fish processors in collaboration with the Fisheries Commission Post-Harvest Unit. Pilot kitchen audits in 2020 and 2021 reviewed 54 kitchens, of which 28 were certified as of January 2021. SFMP provided 19 of those who did not pass the audit in a group of 100 processors who with in-kind grants of GHS 1000 to implement corrective measures and rehabilitate their kitchens to meet the Class 1 standards.

The Fisheries Commission's Post-Harvest Unit continues to lead the Class 1 Certification scheme, which is now managed by an interagency committee chaired by the Director of the Fisheries Commission. The committee also includes representatives of the Post-Harvest Unit, the Ghana Standards Authority (GSA), CSIR, NAFPTA, the Food and Drugs Authority (FDA), an Environmental Health Officer (from local government), the Consumer Protection Agency, local NGOs, Academia, and the Attorney General's Department. Synergy and interagency cooperation among this committee in serving processors will continue to be a key factor of success of this certification scheme.

#### **4.4 Reducing Child Labor and Trafficking in Fisheries**

As noted previously, the SFMP supported the development of an Anti-Child Labor and Trafficking Strategy in the Fisheries Sector. The SFMP supported implementation of aspects of the strategy via the formation of Community and District anti-CLaT Committees that provided direct outreach in communities known for high levels of child trafficking and labor, focusing particularly on highly vulnerable households. Field level communications campaigns and supporting community advocates was implemented by DAA and CEWEFIA with activities concentrated in the Central Region.

Implementing partner FoN supported each coastal district in the Central Region to mainstream anti-CLaT activities into their medium-term development plans. As a result of efforts by the SFMP, a total of 9 coastal districts in the Central Region proposed a collective total budget allocation of GHS 1,145,725 for 2018 and GHS 4.5 million over five-years in their Medium-Term Development Plans (2018-2021) to address CLaT issues. An analysis by SFMP, comparing baseline and 2019 surveys showed improved knowledge of laws, improved attitudes and a perceived reduced prevalence of child labor and trafficking along the coast.

#### **IR 5: Gender Mainstreaming**

The SFMP implemented a gender mainstreaming strategy to increase gender equity in the fisheries sector. Gender mainstreaming activities are based on the premise that if both men and women demand good fisheries management practices, implementation will be timelier, more enduring, and more effectively diffused (Torell et al., 2019). A gender impact assessment conducted in 2018 found that the SFMP had in fact made important strides towards achieving these goals (Bilecki et al., 2018).

An early accomplishment was the adoption at the national level of the "Gender Mainstreaming Strategy for the Fisheries Sector" (Ministry of Fisheries and Aquaculture Development, 2016). This strategy strives to empower fisherfolk, especially women, by enabling their active participation in fisheries management. The next step is allocation of funds to carry out its key provisions. However, as of early 2021, the Ministry of Fisheries and Aquaculture Development had yet to receive anticipated funding from the Government of Ghana for its implementation.

Over the life of project, SFMP supported a number of trainings targeting women and activities focused on mainstreaming gender. These included training on leadership development, fisheries resource management and business skills development. To provide access to credit, SFMP established 56 Village Savings and Loans Associations with 94% women membership and facilitated microloans for *Ahotor* oven construction for 118 women processors.

**Table 7: IR5 - Expected versus actual results on gender mainstreaming.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• Promote increased participation by women on committees, so they are better empowered as equitable decision-makers in fisheries governance.</li> <li>• Build the skills of targeted institutions, NGOs, stakeholder associations and FC to implement programs for advancing gender equity.</li> <li>• Pilot livelihood and microcredit solutions to reduce vulnerability among women and youths with a focus on child labor and trafficking households at risk in the Central Region.</li> <li>• 91% of female participants in activities designed to increase access to productive economic resources.</li> </ul>	<ul style="list-style-type: none"> <li>• A gender mainstreaming strategy for the fisheries sector adopted by MOFAD/FC.</li> <li>• Co-management policy mandates female participation in co-management committees.</li> <li>• A women’s oyster harvesting association granted use rights to the Densu Delta oyster fishery.</li> <li>• Over 10,463 men (57%) and women (43%) trained in various areas of fisheries management and conservation.</li> <li>• 1,018 women leaders from three fisheries associations trained on leadership and advocacy skills to enable women to negotiate and advocate on issues in their communities.</li> <li>• A total of 6,062 fisheries related micro, small and medium enterprises (MSMEs) over 90% women owned, received business development services supported by the project.</li> <li>• 56 micro savings entities (Village Savings and Loan Associations) were set up for over 1174 (1103 females, 71 males) beneficiaries to improve their access to finance through their own savings, however small. As of November 2020, these groups had saved \$51,496 and originated loans to the tune of \$16,136.</li> <li>• US\$ 92,876 in financing from MASLOC, a microfinance company under the office of the president, was accessed benefiting 492 fish processing businesses.</li> <li>• 21 highly vulnerable households particularly prone to offering their children for labor on fishing vessels were identified and supported with single unit <i>Ahotor</i> ovens and business skills training to enable them to earn enough income to reduce their vulnerability.</li> <li>• 86% of female participants in activities designed to increase access to productive economic resources.</li> </ul>

Research related to the Women’s Learning Initiative, discussed below, found that trainings and engagement with SFMP local implementing partners contributed to more equitable hiring and increased support for female beneficiaries and employees. SFMP support directly increased the capacity of female-led fisheries institutions. SDFMP supported capacity development in women-led organizations including CEWEFIA, DAA, and NAFPTA which increased their ability to coordinate and mobilize themselves as advocates in the fisheries sector, as evidenced by an increase in ad hoc and formal annual meetings now held by these groups with the Minister of Fisheries and Aquaculture Development.

In follow-up surveys, government staff noted that women fish processors are more confident, knowledgeable and empowered to speak up now than before SFMP. Men increasingly

acknowledge the role that women play in the fisheries sector. Capacity development related to innovation, conflict management, advocacy, and leadership contributed to women's perception that they have a voice and personal agency in fisheries management decisions. Women in direct contact with the project and those with indirect knowledge of SFMP activities have greater awareness of sustainable fisheries management and report they feel equipped with the knowledge and leadership skills to advocate for good fisheries practices. This is visible in public meetings where women clearly articulate and discuss fisheries management issues alongside men. This was particularly important in the successful 2019 closed season for the artisanal fleet, which many women advocated for in stakeholder meetings. Training in post-harvest processing has helped women handle fish more hygienically and training in business management and financial literacy have provided tools that enabled women to grow their processing enterprises (Bilecki et al. 2019; Torell et al., 2019).

The formation of the Densu Oyster Pickers Association (DOPA) provides a concrete example of SFMP's success in promoting women's leadership in fisheries management. Through DAA, SFMP organized DOPA, a community-based fisheries resource group consisting mainly of women, to manage the oyster resources they harvested in the Densu Delta on the outskirts of Accra. After one year of technical and leadership training, DOPA closed their oyster grounds to harvesting for five months to let the oyster populations regrow. Progress on adopting and implementing a fisheries management measure in this fishery was so significant and swift because the Densu estuary oyster harvesters are a relatively small and cohesive group, which made it easier to reach consensus. Another success factor was the participatory management and monitoring approach, which increased scientific knowledge, confidence, leadership, and the ability to advocate on their behalf.<sup>2</sup>

Gender strategy implementation under SFMP emphasized tangible results ([A Formative Assessment of the USAID Ghana SFMP Mainstreaming Strategy](#)). Actions to establish village savings and loans associations ([VSLA Financial Literacy Training](#)) were later assessed in the context of an evaluation of SFMP's gender program ([MSME and VSLAs Formative Evaluation Report](#)).

Other gender related assessments focused on key partners, Development Action Association and SNV Ghana ([Report on Gender Lens Assessment for SNV Ghana](#)). This study recognized the value of deliberate efforts by team members to include men, women and the marginalized in all programs and also make it convenient for nursing mothers and pregnant women to participate in meetings and activities conducted by the project. Reporting on attendance at all activities was disaggregated by gender. Training continued to target selected leaders from the various fishery associations (DAA and CEWEFIA) in communities in the Central and Western. The communities included Ankobra, Axim, Shama, Elmina, Apam and Winneba. ([Training of Trainers for Leaders of Fisheries Associations in the Western and Central Region](#)). These trainings were later extended to the remaining coastal regions (Volta and Greater Accra) of Ghana through NAFPTA.

**Women's Learning Initiative:** The SFMP also participated in a broader global initiative ([Learning Initiative on Women's Empowerment, Access to Finance, and Sustainable Fisheries Ghana Case Study](#)) initiated by USAID Washington to better understand the role of women and their contributions to sustainable management of fisheries resources by collecting primary

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<sup>2</sup> SFMP trained DOPA members to collect their own water quality information that included pH, turbidity, temperature, and salinity, among others, and connect these measurements to requirements for healthy oyster growth.

data through administration of questionnaires and focus group discussions. The learning initiative sought to investigate the hypothesis that:

- Empowering women through access to finance and other capacity-building interventions **results in stronger fisheries management outcomes** than programs lacking these elements, and
- Engaging women as key stakeholders in fisheries management and improving access to financial tools provides **meaningful pathways for women's empowerment**.

SFMP examined these learning questions in two contexts: (1) small-scale estuarine ecosystems that applied community-based approaches to the management of finfish and oysters, and (2) a large-scale fishery of migratory small pelagics, consisting mainly of anchovies and sardinella species that is under a national scale and centralized management regime.

The findings of the case study indicated that the first hypothesis is true for Ghana's small-scale estuarine ecosystems where women are direct resource users and directly involved in the management of the resource. In the large-scale small pelagic fishery, women are processors of what is harvested by men and their traditionally defined roles mean they have little to no say in the gear or methods used for fishing, even though they sometimes finance fishing expeditions. Women in the large-scale marine fishery are more economically empowered than most women in Ghana, yet they are excluded from the management of the fishery. They lack the ability to engage institutions and so use the financial tools available to them to build resilience when there are disruptions in the fish supply.

The second hypothesis also holds true in the Pra and Ankobra where women are direct harvesters of the resource and are involved in the governance of the fisheries, have access to VSLAs and micro loans, and are able to make decisions for themselves and their household but not on decisions on the resource, except when their livelihoods are affected such as when mangroves are illegally harvested, or waste is dumped in the river. But those in the Densu are more strongly exercising their decision-making power over the resource.

For the large-scale small pelagic fishery, the second hypothesis holds partially true to the extent that the engagement of women as stakeholders in fisheries management has led primarily to their empowerment as processors and traders in post-harvest improvements, improved access to financial tools, and financial empowerment. However, it has not led to significant influence in fisheries management.

## **IR 6: Public Private Partnerships**

The SFMP forged partnerships with multinational companies and with large firms based in Ghana to further project objectives. Expected versus actual results are summarized in Table 8 below.

SFMP's public private partnership workstream developed two full partnerships: one to develop a micro-savings and micro-insurance product to build resilience of fishing households, and the other to develop a low-cost communication, market information system, and digital finance platform aimed serving fisherfolk. During the COVID-19 response extension, SFMP scoped an additional potential partnership for diversified livelihoods that could be developed under future fisheries programming.

**Table 8. IR 6 - Expected versus actual results for public private partnerships**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>Mobilize at least two public private partnerships benefiting the fisheries sector.</li> </ul>	<ul style="list-style-type: none"> <li>Fishers Future Plan Partnership created that provides micro-insurance and savings packaged for especially for fisherfolks.</li> <li>A tailored mobile service plan (Tigo Fishers Network) to improve fisherfolk’s access to weather and fish market information, provide access to mobile savings and microinsurance schemes, and enhance communication between the Fisheries Commission and fisherfolk created but then terminated after Tigo merger with Airtel.</li> <li>Diversified livelihood concept for integrated aquaculture and crop production models (Skyfox) for fisherfolk developed.</li> </ul>

### 6.1 MiLife Fishers Future Plan

In October 2016, SFMP, Millennium Insurance, UT Life Insurance, Vodafone, and BIMA partnered to launch the Fishers Future Plan (FFP). The FFP is an affordable life insurance package for fisherfolk, coupled with a mobile money platform for premium payments and receipt of claims. The package is tailored to the needs of Ghana’s fisherfolk, allowing savings for retirement, future consumption and partial withdrawal during lean seasons or closed seasons for fisheries. Through the FFP, fisherfolk can allocate roughly 80% of their monthly premiums as savings – accruing 0.92% monthly interest – while using the remaining 20% as an insurance premium from which claims can be made when necessary. The FFP uses Vodafone Cash for premium collections and claim receipts.

The partners launched pilot activities for the FFP in mid-May 2017, which were expected to run for a maximum of six months before scale-up coast wide. Communities chosen for the pilot included James Town (Greater Accra Region), Moree (Central Region) and Shama (Western Region). To maximize enrollment, FFP was introduced to fisherfolk within the catchment area of each pilot community. In February 2018, the FFP partners decided to scale up to two additional communities, Elmina and Axim, based on successful implementation thus far.

By December 2018, the FFP was live in 5 communities and had 4,060 customers who had provided premium contributions worth about \$50,000. Moreover, the FFP received over \$430,000 in direct and in-kind partnership investment. However, due to some setbacks, such as when BIMA, the partner responsible for managing the payment platform and sales agents, left the partnership, the remaining partners decided to pause and incorporate learnings from an SFMP-led assessment of the partnership before further enrollment across Ghana’s coast.

The assessment, which was carried out in October 2017 through focus group discussions with 130 fisherfolk, found high satisfaction with the FFP, with 96% stating they would recommend it to friends and family. Users found the mobile savings aspect of FFP very attractive, even more than the insurance component of the program, and suggested that it could be improved by including specific features focus on saving for education, health and retirement costs. However, users struggled to use self-transfer options on the Vodafone Cash platform, depending on FFP sales agents to make deposits for them. Available Vodafone mobile money agents active in fishing communities are generally not aware of FFP, which reduced the

policyholders' trust in the program and translated to low deposits via these merchants. Finally, a majority of respondents reported that they have been duped in the past by microfinance, savings and loans institutions and as such they are skeptical of making significant or frequent deposits at this early stage of the program. Most understand the concept of the claim (as money paid for any unforeseen calamity) but they do not know the process to initiate a claim. These points indicated the need for greater customer engagement and outreach on the part of MiLife and the FFP partners to build trust and understanding of the benefits of the FFP.

MiLife relaunched the FFP to new enrollments in late 2019/early 2020. Based on the success of the FFP model, MiLife decided to develop similar products for customers outside of fishing communities as well and is rolling these products out across the country.

## **6.2 Tigo Fishers Network**

Another private sector program supported by SFMP is the Tigo Fishers Network (TFN). The TFN program created a tailored mobile service plan to improve fisherfolk's access to weather and fish market information, provide access to mobile savings and microinsurance schemes, and enhance communication between the Fisheries Commission and fisherfolk. Users of TFN's closed calling network for fisherfolk paid lower rates for calls to other fisheries sector actors in the network and received messages from the Fisheries Commission about best fishing practices, regulations, weather forecasts, and price information. This partnership included telecommunications company Tigo, MOFAD/FC, and SFMP, and was signed in March 2017.

Following signature of the TFN partnership, Tigo launched a community outreach exercise to promote the TFN and solicit feedback on the initial design of the network. SFMP brought Tigo and the Fisheries Commission together in June 2017 for a partnership workshop to coordinate a pilot of the TFN in Axim and Elmina. However, progress stalled in October 2018 after the merger of Airtel and Tigo in Ghana. Airtel-Tigo assigned a new TFN team to support the partnership, but the team did not respond to follow up communications about the partnership action plan and ultimately, SFMP terminated the partnership and Airtel eventually cancelled the program.

## **6.3 SkyFox Limited**

To support fishing communities to weather the impacts of the COVID-19 pandemic, USAID requested that SFMP explore livelihood approaches that could provide stable incomes for fisherfolk during partial or full COVID-19 lockdowns to support vulnerable fishing communities. As part of this support, SFMP reached out to SkyFox Limited, a for-profit organization that implements integrated aquaculture and crop production models in Ghana, Guinea, Liberia, and Sierra Leone, to assess their potential fit for a partnership that could support diversified livelihoods in coastal communities. Their methodology maximizes resources by utilizing water from uphill fishponds to irrigate downhill crops, providing both water and essential nutrients. This overcomes challenges for farmers inhabiting hilly drylands who have limited access to wetlands suitable for fish production and little knowledge of water conservation technologies. The model could provide fisherfolk with livelihood options beyond capture fisheries, while continuing to provide a source of affordable, high-quality protein on the Ghanaian market to meet food security needs. It could also have indirect positive impacts on artisanal fish processors by providing a replacement for marine species without having to depend on expensive frozen fish imports. Based on scoping conversations, SFMP did not pursue an aquaculture pilot in collaboration with SkyFox because their model does not yield income for six months – the amount of time it requires for fingerlings to grow to a harvestable size – which did not leave sufficient time to design, implement, and evaluate a pilot given the overall period of the COVID-19 extension. SFMP developed a partnership concept note that



could be used to guide potential future engagement between USAID and SkyFox around livelihoods for fisherfolk.

### **IR 7: Capacity Development of Targeted Institutions**

The SFMP supported strengthening of key local partner organizations’ capacity to develop and implement managed access fisheries management plans and improve the quality and sustainability of the training and outreach services local organizations provide to their constituencies. Expected versus actual results are summarized in Table 9 below.

**Table 9: IR 7 – Expected versus actual results for capacity development.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• 19 Local institutions improve organizational capacity including key government institutions as well as key local partners FoN, HM, DAA, Daasgift and CEWEFIA.</li> </ul>	<ul style="list-style-type: none"> <li>• 17 institutions with improved organizational capacity.</li> </ul>

The SFMP focused on the organizations listed in Table 10 identified during the project design phase and during the course of implementation as key enabling, implementing, and change initiating organizations in Ghana’s fisheries sector.

Assessments were carried out for each organization to benchmark status, identify priority areas for capacity development, facilitate SFMP and partner decision-making on how the SFMP might best contribute, and document progress. The SFMP conducted baseline, mid-term, and final organizational capacity assessments (OCA). Final assessments were completed in 2019.

For CSO’s, the project employed a standardized scoring methodology using OCA tools adapted from USAID.<sup>3</sup> Following an orientation workshop, the three-step process included (1) self-assessment, (2) a full OCA on-site assessment, and (3) participatory evaluation of results and action plan development.

For government and public university units, the OCA process employed a qualitative survey using key informant interviews within and outside the units assessed. This was complemented by in-depth technical needs assessments conducted by subject matter experts for some organizations to ensure the technical depth of the capacity development needs were appropriately captured. For example, specialists assessed: FSSD’s Management Information System (MIS) platforms and technical capacity for fisheries data collection and stock assessment analysis; organizational training needs in fisheries leadership; enforcement units’ readiness to adopt competency-based programs; gender disparities and mainstreaming opportunities; GIS capacity building needs for coastal spatial planning; and academic curricula development needs for UCC, among others. The World Bank-funded WARFP organizational capacity needs assessment of the Fisheries Commission was also considered.

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<sup>3</sup> See <https://www.usaid.gov/sites/default/files/documents/1864/OCA%20Tool%20for%20USAID-Funded%20Organizations%20Participants%20Copy.pdf> and <https://www.usaid.gov/sites/default/files/documents/1864/OCA%20Tool%20for%20Community%20Based%20Organizations.pdf>

**Table 10: Beneficiary organizations for capacity development.**

Identified during project design	Identified during implementation
<b>Government and Public University Units</b>	
<ul style="list-style-type: none"> <li>• Monitoring, Control and Surveillance Unit, FC/MCS</li> <li>• Fisheries Scientific Survey Division, FC/FSSD</li> <li>• Post-Harvest Unit, FC/PHU</li> <li>• Marine Fisheries Management Division, FC/MFMD</li> <li>• Fisheries Enforcement Unit, interagency body, FEU</li> <li>• Western Region Land Use and Spatial Planning Authority, WR/LUSPA</li> <li>• Central Region/LUSPA</li> <li>• University of Cape Coast/Centre for Coastal Management, UCC/CCM</li> <li>• University of Cape Coast/Department of Fisheries and Aquatic Science, UCC/DFAS</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring &amp; Evaluation Unit, FC/MEU</li> </ul>
<b>CSOs: NGOs &amp; Regional Associations</b>	<b>CSOs: National Membership Associations</b>
<ul style="list-style-type: none"> <li>• Friends of the Nation, FoN</li> <li>• Hen Mpoano, HM</li> <li>• Central and Western Fishmongers Improvement Association, CEWEFIA</li> <li>• Development Action Association, DAA</li> <li>• Daasgift Quality Foundation, DQF</li> </ul>	<ul style="list-style-type: none"> <li>• Ghana Industrial Trawlers Association, GITA</li> <li>• National Fish Processors and Traders Association, NAFPTA</li> <li>• Ghana National Canoe Fishermen Council, GNCFC</li> <li>• National Fishermen Association of Ghana, NAFAG</li> <li>• Fisheries Alliance, FA (scoped but not retained)</li> </ul>

SFMP organizational capacity development support focused on high priority needs of each organization that were not addressed by other development partners and were within the scope and resource limits of SFMP. As highlighted in more detail in the above IR sections, SFMP focused on the areas of improved governance and management systems, development of programs and partnerships, development of staff capacity through training, material support (equipment), and physical facilities and operational environment. Government and university units benefitted from leadership courses, study tours, stock assessment training, training in fisheries laws and policies, competency-based certification approaches, training and material support for application of GIS, formal degree training, provision of laboratory equipment, and

a small UAV equipped to take aerial imagery to create high resolution maps for environmental planning and assessments.

In addition to support described in IR sections of this report above, the SFMP provided technical and financial support and training for selected process and system improvements identified as crosscutting needs among the CSO partner organizations. These included financial and administrative procedures, board development, and monitoring and evaluation systems. The SFMP provided software and licenses, trained and coached five local CSO implementing partners' financial staff on QuickBooks. Annual external financial audits of implementing partners by international audit firms were carried out to assess the progression of financial management systems development. Combined programmatic and financial audits were conducted by the SFMP core team to ensure activities and targets were being achieved. An [Organizational Development Manual](#) covering each of the areas assessed in the OCA process was finalized and validated with all CSO partners. National membership associations (e.g., NAFPTA, GNCFC) benefitted from training and support to revise their charters and management systems and received training and physical support (office refurbishment and computers) and interns to equip them to carry out evidence-based advocacy and be actively involved in policy formulation and implementation.

A transformation of attitudes and perspectives about the critical roles and most effective approaches of the various institutional actors in the sector is among the most important and enduring outcomes of SFMP's organizational capacity development efforts. Statements shared by key stakeholders illustrate this result.

*"Fishermen never used to talk to fishermen about conservation issues. Each one was for himself. SFMP improved communications between the Fisheries Commission and fishermen, and among fishermen themselves." (Ghana National Canoe Fishermen's Council)*

*"Women need to make money in order for the men to make money. Women and fishermen have one voice. It is win/win if fish are sustainably managed and thriving." (National Fish Processors and Traders Association)*

Changes in attitude and approach were translated into concrete actions and outcomes for sustainable fisheries management. A summary of key outcomes achieved by the various institutional actors supported by SFMP's capacity development initiative is presented in Table 11. These outcomes directly contributed to higher order outcomes demonstrated through applied management actions for targeted fish stocks highlighted under IR4.

For CSOs, quantitative OCA results highlight the important differences in organizational capacity status for national membership associations. As shown in Table 12, and Figures 13 and 14 below, national membership associations are still nascent organizations with lower scores on average than the initial implementing partners who received greater support from SFMP. National membership associations started with low scores and have made very little progress. Although each association has revised governance and management documents, developed with SFMP support, none have measurable changes.

**Table 11: Summary of key outcomes as of 2019 final assessment.**

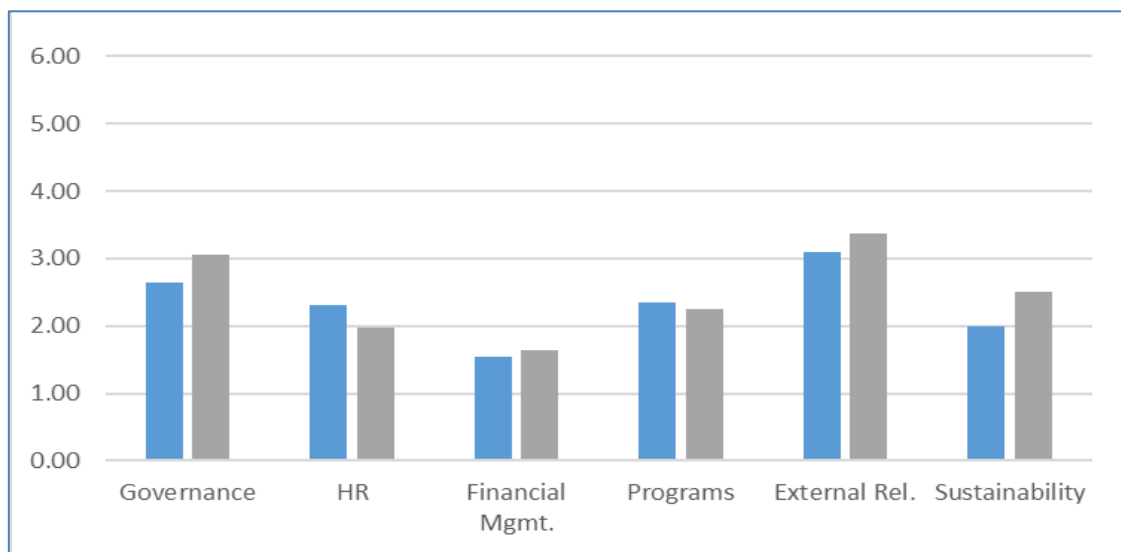
<b>Government of Ghana: FC, FEU and LUSPA</b>
<ul style="list-style-type: none"> <li>• Fisheries data timeliness, quality and access improved through transformation from paper to IT systems.</li> <li>• FSSD/STWG small pelagic stock assessments available to stakeholders and decision-makers. Catalyzed consensus on need for closed seasons.</li> <li>• Biological data to monitor the impact of Ghana’s first ever national scale canoe fishery closed season from mid-April to mid-May 2019 collected and e-reported.</li> <li>• MCS land patrols and sensitization missions increased.</li> <li>• More than 200 Marine Police trained on Fisheries laws and policy.</li> <li>• FEU approach at landing sites provides more effective problem resolution.</li> <li>• Gender mainstreaming strategy validated. Stakeholders perceive new and accepted norms for women’s participation and quality/value added due to their inclusion. Gender data systematically disaggregated.</li> <li>• Improved fish smoking oven developed (the Ahotor), adopted and promoted by the FC. Use scaling up.</li> <li>• Certification and labelling to add value to hygienic small-scale fish processing established and scaling up.</li> <li>• Central Region LUSPA Training Center. Coastal and fisheries issues better integrated into land use plans. Coastal resiliency increased. Example: Permit to build on Pra wetland buffer zone denied. Plan for relocation of villages vulnerable to erosion and flooding agreed with villagers, new land identified, demarcation started.</li> <li>• Anti-CLAT Strategy approved and applied. Infractions intercepted.</li> <li>• Fisheries Co-Management Policy Framework awaiting approval as of mid-2019 (Later approved in 2020, as well as 3 estuarine Co-Management Plans delegating fisheries use rights to resource user associations).</li> <li>• Fisheries Act revisions proposed and awaiting approval.</li> </ul>
<b>Public Universities: UCC</b>
<ul style="list-style-type: none"> <li>• Chair of the Science and Technical Working Group (STWG).</li> <li>• Outreach supporting local co-management plans.</li> <li>• Drone program and database and fisheries age and growth lab permanently hosted. Used in teaching, faculty and student research.</li> <li>• Fisheries leadership, climate change, coastal management, GIS, fisheries management short courses.</li> <li>• 5 students earned URI advanced degrees.</li> <li>• 12 of 16 current PhD candidates are women.</li> <li>• Joint Degree program with URI instituted.</li> </ul>
<b>Civil Society Organizations</b>
<b>National Membership Associations: GNCFC, NAFPTA, GITA, NAFAG</b>
<ul style="list-style-type: none"> <li>• Revised constitutions, trained boards, SOP Manuals.</li> <li>• Advocacy actions taken.</li> <li>• Ahotor improved ovens in use by individual processors.</li> <li>• Processors eye health screened.</li> <li>• Collaborative Cuttlefish gear research conducted (UCC/GITA).</li> </ul>
<b>Local NGOs (FoN, HM); Regional Membership Associations (DAA, CEWEFIA) (SFMP Implementing Partners)</b>
<ul style="list-style-type: none"> <li>• Trained 56% of the 6,583 people and 63% of the women trained by SFMP in natural resources management, biodiversity conservation, and climate change by end of year 4.</li> <li>• 3 Local Co-Management Plans implemented (Annual closed seasons observed). Participatory, rights-based, ecosystem approach and model demonstrated. Organizational capacity to replicate.</li> <li>• Over \$1.2 million diversified funding from other donors.</li> <li>• 2 Fish Processing and Training Centers operational with Business Plans. One with Ghana FDA Certification.</li> <li>• Ahotor improved ovens in use by individual processors.</li> <li>• Revised constitutions, trained boards. Effective automated financial management systems and SOP Manual implementation verified by 3 successive annual external audits.</li> </ul>

**Table 12: CSO average OCA scores and progress over life of project.**

CSO Type	Average OCA Score			% of Ideal (6)	% of Ideal (6)	Action Plan
	Baseline	Mid	Final	Baseline	Final	% Done
SFMP IPs	4.19	5.22	5.49	70%	91%	89%
NATL. ASSOC.	2.31	0.00	2.48	38%	41%	24%



**Figure 13: SFMP CSO implementing partners (baseline (blue), midterm (orange) and final (grey) average OCA scores (6 = ideal).**



**Figure 14: National membership associations (baseline and final) average OCA scores.**

## COVID I - Fisherfolk at fisheries sites adhere to COVID-19 disease prevention protocols

As part of the SFMP COVID-19 response component added in the final 11 months of the project, SFMP implemented a behavior change communications strategy along the entire coastline to achieve this result. In addition, SFMP provided handwashing stations and supplies to fish landing, marketing and processing sites in 242 locations in all regions along the coast. Each handwashing station had a trained advocate that maintained handwashing supplies and educated peers on safe practices. Expected versus actual results are summarized in Table 13 below.

**Table 13: COVID I – Expected versus actual results on COVID disease prevention.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• Fisherfolk at 300 landing sites, processing and/or fish markets sites better adhere to official COVID-19 disease prevention protocols.</li> <li>• 24 COVID social media groups created with 901 persons.</li> </ul>	<ul style="list-style-type: none"> <li>• 242 fish landing, processing and marketing sites provided with handwashing stations and supplies.</li> <li>• 153 sites (63%) with adequate supplies and adhering to good handwashing practices.</li> <li>• 148 sites (61%) adhered to other good practices (social distancing and face masks).</li> <li>• An overall increase in sites adhering to COVID Safe practices in January-March 2021 compared to October-December 2020.</li> <li>• 21 COVID social media groups with 700 persons established and functional.</li> <li>• 10,000 posters in 5 local languages on COVID-19 distributed in 249 fish landing sites.</li> <li>• Jingles aired on 13 radios stations over 7.5 months and 18 animations aired on 2 National TV stations over 7.5 months.</li> <li>• Coronavirus music video viewed on You-Tube over 388,000 times.</li> </ul>

### Social and Behavior Change Communication (SBCC) Strategy

The SBCC strategy implemented by the SFMP fed into the national initiatives of the Government to reduce the spread and infection of the virus. At a point, education on the disease from the government, had waned. However, the SFMP continued its education on TV, Radio, WhatsApp platforms and at landing beaches through March of 2021. Hence, even though the government had reduced its education, the SFMP helped in bridging the gap by constantly reminding fisherfolk in particular about the disease.

Data gathered by the SFMP site advocates showed that fisherfolk at fish landing sites were better adhering to the COVID-19 safety protocols over time. This can be attributed to the successful SBCC campaign that documented an increase in fisherfolk knowledge and attitudes towards COVID-19 and its safety protocols, as well as in the practice of the safety protocols. Monitoring by SFMP’s implementing partners also indicated that due to the education fisherfolk were receiving, there was an increase overall awareness in hygienic practices.

## Education, Information and Communications Campaign:

Key to the SBCC strategy was the development of IEC materials in collaboration with USAID Ghana, MoFAD/FC, GHS, MoH, Ministry of Education (MoI), GNCFC, and NAFPTA, and their dissemination. The final materials were pre-tested and approved by these institutions before they were released publicly. SFMP printed 10,000 posters covering 10 different COVID-19 themes (see Table 14 for specific topics of posters and Figure 15 for examples). SFMP produced three animations and jingles covering different themes on COVID-19 and translated them into 5 coastal languages (Ewe, Dangbe, Fante, Ga, and Nzema).

**Table 14: List of posters printed and distributed.**

Thematic Areas
COVID-19 Safety protocols for fisherfolks
Wear your recommended mask the right way
Face masks and social distancing
Reduce physical contact
Precautionary steps before and after fishing expeditions
Break the cycle, stop the spread
Get involved, make your Veronica Bucket
Disposal of your face mask
The right way to wash your hands
Washing your cloth mask the right way



**Figure 15: Posters on COVID-19 safety protocols. Left: A poster in Ga on the proper way to wear a face mask. Right: A poster in Ga on proper handwashing**

These materials touched on general information on COVID-19, symptoms, safety practices (handwashing, wearing of face masks, social distancing), precautionary measures for fisherfolk before and after fishing expeditions, breaking the cycle of spread, how to make a hand washing station, disposal of face masks and care for reusable cloth masks. The messaging was situated in the context of fisherfolks' everyday life to help them relate to and understand the messages.

Through SFMP's implementing partners; Development Action Association, Central and Western Fish Improvement Association, Friends of the Nation, and Hen Mpoano, the posters were distributed across 249 fish landing sites in the four coastal regions (Greater Accra, Volta, Western, and Central). In the various regions, the jingles and campaign song aired on public address systems at the landing sites, and community information centers. Posters were also provided to the MOFAD and the Fisheries Commission. The GNCFC were also provided leaflet type posters for their canoes and outboard engines.

The jingles were aired on 13 widely listened to radio stations across these regions for 7.5 months (September 2020 to April 2021). The 18 animations aired on Ghana Television and United Television, which are some of the most watched TV stations by fisherfolk, for 7.5 months (September 2020 to April 2021).

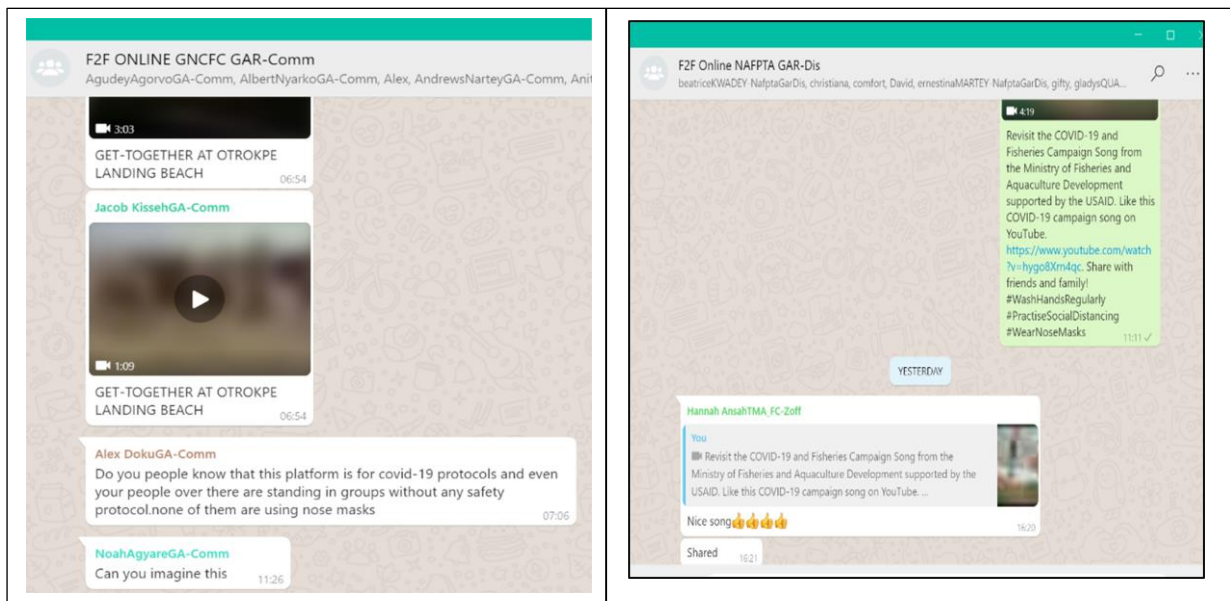
SFMP also collaborated with Kofi Kinaata, one of Ghana's leading pop stars to compose a song on COVID-19. The song was mainly in Fante, with lines in the other coastal languages. It became an instant hit, making it the official song for COVID-19 in the country. Through the song, fisherfolk and the general public were educated on the disease and safety practices. The song is still receiving airplay on radio stations across the country, with the music video enjoying airplay on television stations as well. The [music video](#) had over 388,000 views on YouTube as of June 2021.

In keeping with the SBCC Strategy, which aimed to influence all spheres of the fisherfolk information ecosystem, including the digital information ecosystem, 21 groups were created on the popular messaging app "WhatsApp Messenger" to share, discuss, and disseminate COVID-19 IEC materials, and also discuss fisheries issues in the communities, while providing a platform for real time feedback on project interventions. These groups also played a role in the selection of beneficiaries for the economic safety net cash transfer scheme. The 21 groups had a total membership of 700 individuals with a roughly equal gender distribution. Membership included influencers in the main fisherfolk associations including NAFPTA, DAA, and CEWEFIA, and the GNCFC. The COVID-19 IEC materials (posters, campaign song video, animations) were also disseminated via the 21 WhatsApp platforms twice every week.

Members were regularly encouraged to share the COVID-19 materials with friends and family in their communities on social media or through other channels. They also participated in group discussions through text, voice messaging, and images on adhering to COVID-19 safety protocols at landing sites, fisheries issues, and on specific community concerns (see Figure 16).

To incentivize active engagement among members and the sharing of the IEC materials, they were provided with 30 GHS (approximately US \$5.23) data top up and at the national and district levels. This was done on a monthly basis for four months (September to December 2020).





**Figure 16: Screenshots of discussions on some of the WhatsApp platforms. Left: Group members admonishing another member for flouting safety protocols at a community event. Right: Campaign song on coronavirus posted in a group.**

Fifty-six messages comprising SFMP’s IEC materials on fisheries issues and COVID-19, messages on the economic safety net scheme, and verification of monthly data/airtime top up were shared in the group on a weekly basis from September 2020 to March 2021. Eighty-eight percent of the total group membership of 700 persons accessed/opened the messages posted on the platform, showing a high engagement with posted content.

### **Deployment of Hand Washing Stations to Fish Landing and Processing Sites**

To ensure easy access to running water and soap for use by fisherfolk, SFMP deployed 249 hand washing stations and consumables to 242 active landing beaches and fish processing sites following a baseline survey of all landing sites along the four coastal regions of Ghana conducted by the University of Cape Coast (UCC). These handwashing stations came in two different sizes; 100 liters for densely populated sites and 80 liters for all other sites (see Figure 17).

A total of 246 persons were selected from the communities and trained as advocates to sensitize the community on the IEC materials and also maintain the handwashing stations by ensuring they had a constant supply of water and soap. The site advocates also collected data on the frequency of use of the handwashing station to inform planning by project staff. The site advocates were provided with protective gear and compensated for their time with a monthly stipend of GHS 200 (US\$35) for those managing the 100-liter handwashing stations and GHS 150 (US\$26) for the 80 liter stations.



**Figure 17: Pictures of fisherfolk using the handwashing stations. Left: Fisherman at Adjoa landing site using the 100-liter handwashing station. Right: NAFPTA leader at Whuti landing site using the 80-liter handwashing station.**

### **Landing Sites Competition**

The SFMP rolled out a COVID-19 safety practices competition among 242 landing beaches along the coast. The competition dubbed “COVID-19 Safety Landing Sites Competition” sought to reward landing sites that best adhered to the COVID-19 safety practices, particularly frequent handwashing, face mask wearing, and social distancing at fish landing sites. The competition encouraged adoption and practice of the approved safety practices and it also created peer pressure influence among fisherfolk.

The competition ran for three months and was held on a district-by-district basis. Real time data was gathered by the SFMP through phone polling of site advocates. Every month, sites advocates were called to answer questions on behavior and practices of fisherfolk at the landing sites. Between October of 2020 and January 2021, phone poll data showed, on average, improvements in adherence to COVID-safety practices with handwashing having slighter better adherence compared to social distancing and wearing of face masks. Phone polling data was validated by routine announced and unannounced visits by the SFMP and its implementing partners and a committee made up of the Fisheries Commission and SFMP’s partners. Winning sites for each month were presented with plaques to acknowledge their achievements and plastic chairs to aid in meetings held at the landing sites (see Figure 18). At the end of the three months, 73 out of 242 landing sites won awards.



**Figure 18: An award presentation for the landing sites competition – Fisheries Commission Zonal officer of Nzema East presenting the best landing site plaque to the chief fisherman of Sowlo landing site for winning the November competition.**

### **COVID 2 - Two thousand vulnerable fisheries households avoid extreme poverty**

As part of the SFMP COVID-19 response in the final 11 months of the project, the SFMP supported 1,905 extremely vulnerable fisheries-dependent households to avoid extreme poverty. In this pilot activity, an unconditional cash transfer was the vehicle for households to avoid extreme poverty by providing adequate resources to obtain a minimum food basket for the household. Expected versus actual results are summarized in Table 16 below.

**Table 15: COVID 2 – Expected versus actual results for households avoid poverty.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>Two thousand extremely vulnerable fisheries-dependent households avoid extreme poverty.</li> </ul>	<ul style="list-style-type: none"> <li>1,905 vulnerable fisheries dependent households received \$208 each over 4 months for a total amount disbursed to all households of \$396,240.</li> <li>Households receiving cash benefits had less household food insecurity than a control group.</li> <li>56 percent of women of reproductive age in households receiving the cash benefit achieved the minimum dietary diversity.</li> </ul>

In January 2020, the World Health Organization (WHO) declared the outbreak of a new coronavirus disease (COVID-19), a Public Health Emergency of International Concern. This virus spread to most countries in the world including Ghana. Fishing activities in Ghana continued under business-as-usual conditions even during the limited lockdown of the country necessitated by the pandemic, since they were considered to be essential for food security. In

addition to the challenges of COVID-19, there were already existing challenges within the fisheries sector related to near collapse of the key fish stocks targeted by the marine artisanal fleet, which would require closure of the fisheries during the peak spawning periods. An [SFMP assessment](#) documented a drastic but temporary reduction in income of fishing households when a fishery closure was first applied to the sector in 2019. As a result, this COVID-19 response activity was also considered as a pilot economic safety net program which could be integrated into future fisheries management measures for the sector. As a pilot, SFMP developed and documented the process so the [methodologies and procedures](#) can also be considered for application to future economic shocks.

The methodologies and procedures applied in delivery on this objective took into consideration the constraints necessitated by the COVID-19 pandemic such as social distancing and frequent handwashing associated with the need to reduce contact with physical objects including cash benefits to be provided to the poor and vulnerable households. The key components of the pilot of economic safety net cash transfer program are described below.

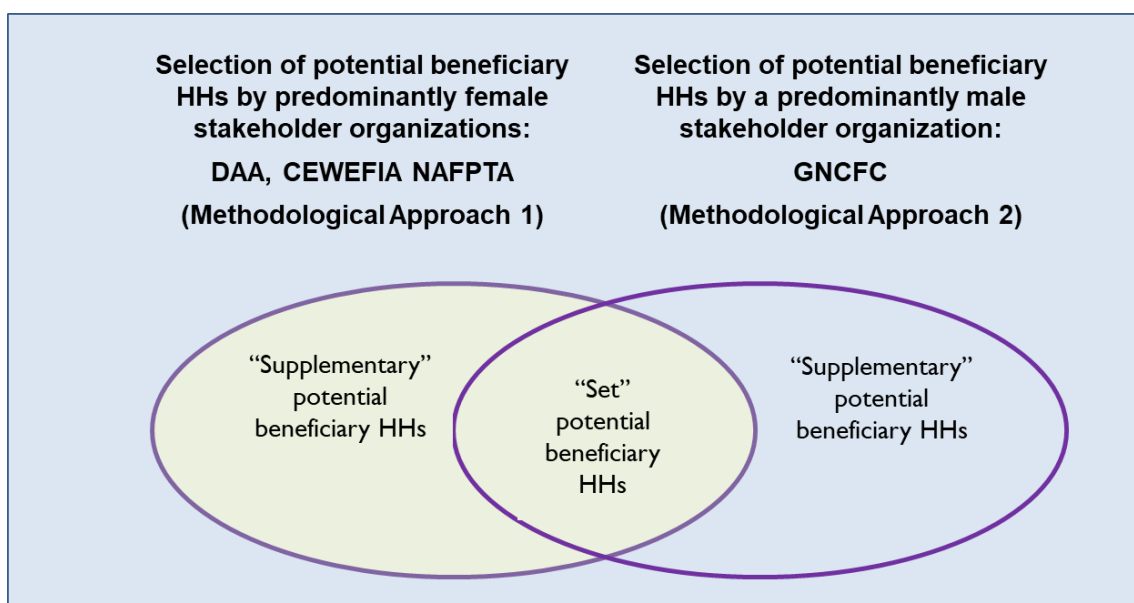
### **Selection of Beneficiary Households**

The selection or nomination of potential beneficiaries went through several steps starting with the development of selection criteria by representatives of fisher associations, categorized into two main groups; fish processors and fishermen. This informed the two-pronged approach adopted in the selection of potential beneficiaries of the pilot of economic safety net cash transfer program, with each component tasked to select 2,000 households to generate a total list of 4,000 potential beneficiary households:

- a) Multiple Stakeholder organizations involving predominantly networks of female fish processors. These were the National Fish Processors and traders Association (NAFPTA), The Central and Western Region Fishmongers Improvement Association (CEWEFIA), and Development Action Association (DAA).
- b) A single stakeholder organization involving networks of predominantly male fish harvesters. This was the Ghana National Canoe Fishermen’s Council (GNCFC).

The selection of potential beneficiary households through the two-pronged approach was done independently of each other, using the same criteria to select from the same population. The design recognized the possibility of overlap between the two selection approaches as shown in Figure 19 below, and considered the households falling within the overlap or intersection of the two selection processes as “truly poor and vulnerable” and not requiring further vetting or validation of their status as being poor and vulnerable.

<b>Strengths of the Approach</b>
<ul style="list-style-type: none"> <li>• It recognizes that associations of fishers and processors are well placed to objectively, and transparently, develop criteria as well as identify the most vulnerable households in their communities.</li> <li>• Development of selection criteria by a balanced representation of associations of male and female stakeholders themselves ensures that the inherent subjectivity of what constitutes poverty and vulnerability are addressed and the need for social specificity of the notion of poverty and vulnerability are accommodated.</li> </ul>



**Figure 19: The two independent selection processes with possibility of overlap.**

Local representatives of the fisheries associations through the two selection processes identified a total of 3,244 out of the expected 4,000 potential beneficiary households they considered to be poor and vulnerable using the criteria they had developed themselves, across 157 landing sites. The results of potential beneficiary households selected by stakeholder organizations is shown in the Table 16 below. The planned number of potential beneficiary households per region was based on the number of Landing Beaches as an index of the population of fishers.

**Table 16: Distribution of planned and actual number of potential beneficiary households selected by fisheries associations.**

Region	Planned No. of Head of Household/ Region	No. of Head of Household Selected by NAFPTA/ DAA/ CEWEFIA	No. of Head of Household Selected by GNCFC	Total No. of Head of Households Selected
Volta	644	316	300	616
Greater Accra	808	25	259	534
Central	1328	528	512	1040
Western	1220	579	475	1054
<b>Total</b>	<b>4000</b>	<b>1698</b>	<b>1546</b>	<b>3244</b>

Following selection of the 3,244 potential beneficiary households by the fisheries associations, the next step was to vet and validate the poverty status of potential beneficiary households using a proxy means test survey instrument, the [Poverty Probability Index](#) (PPI). At the design stage, it was considered to use the same National Targeting System (NTS), used by the LEAP program under the Ministry of Gender, Children and Social Protection (MoGCSP) to assess poverty status of potential beneficiaries falling outside the intersection of the two selection processes. During implementation it was realized that the COVID-19 restrictions and time constraints meant it was not possible for SFMP to adapt the Proxy Means Test used by the

LEAP program, which would have required in person administration of the survey instrument and more time. As a result, the SFMP chose to use the PPI as it was simpler and could be administered by phone polling rather than in-person interviews.

### Disbursement of Cash to Verified Beneficiary Households

A total of 1,987 beneficiary households were finally verified as shown in Table 17 below, however only 1,905 received the mobile money cash transfer. This was due mainly to difficulties in some beneficiaries obtaining SIM cards and registration with a mobile money provider. SFMP transferred the cash to Npontu Technologies a local digital financial payments service provider to send the transfers to each beneficiary over the four-month period. Npontu Technologies submitted a financial report showing cash transfers to each mobile number at the end of every month. A total of \$208 in local currency was transferred to each of the 1,905 households between December 2020 to March 2021 for a total cash disbursement to all beneficiaries of \$396,240. Due to delays caused by SIM and mobile money registration, some beneficiaries received more than one monthly payment at the same time to catch up. This was necessary due to SFMP's hard end date, leaving no room to spread payments out over additional months for those with a delayed first payment.

**Table 17: Planned and final beneficiary households by region.**

Summary Result of Selection and Verification Processes							
Location & Initial Allocation		Overlap & Variation with LEAP		Variation of Final Beneficiaries from Initial Allocation		Final Beneficiaries	
Region	Initial Allocation	Overlap with LEAP Data	% Overlap	Variation from Initial Allocation	% Variation	No. of Final Beneficiaries	% of Total Beneficiaries
Volta	322	14	8%	41	12.7%	363	18%
Greater Accra	404	35	20%	-20	-5.0%	384	19%
Central	664	52	29%	42	6.3%	706	36%
Western	610	76	43%	-76	-12.5%	534	27%
<b>Total</b>	<b>2,000</b>	<b>177</b>	<b>100%</b>	<b>-13</b>	<b>-0.7%</b>	<b>1987</b>	<b>100%</b>

### Impact of Cash Transfer

The project undertook post-disbursement monitoring on-site and via phone surveys to analyze the receipt and use of cash transferred and its' impact. The findings are presented below:

- 70% of beneficiary households were female headed households.
- The top use of funds was to buy food for the family (88%), followed by schooling of children (82%), and then investing in their business (59%). In March, more respondents used funds for food (93%) and schooling (86%), and less for investing in a business (47%), placing in a bank account, loaned money to others, or for other purposes, compared to February. This suggests that financial needs may vary over time.
- A Household Food Insecurity Access Scale (HFIAS) questionnaire indicated that the receipt of \$52/ month for 4 months may have helped decrease household hunger in beneficiary households, with a high degree of stability from February through to March 2021, and less food insecurity compared to a control group.

- A Women’s Minimum Dietary Diversity questionnaire indicated that diet diversity remained stable during cash disbursement and approximately 56% of women of reproductive age in the household attained a minimum or adequate dietary diversity.

### **Potential Applications for Sustainable Fisheries Management**

Investment in Social Protection Policies provides opportunities for addressing adverse impacts of development policies and management interventions. In 2019, the SFMP facilitated implementation of the first closed season for the marine artisanal sector, as a management measure to rebuild depleted fish stocks. The SFMP commissioned a socioeconomic assessment of its impact and found a drastic but temporary reduction in income of fishing households and increase in household hunger ([Assessment of the Socio-Economic, Food Security and Nutrition Impacts of the 2019 Canoe Fishery Closed Fishing Season in Ghana](#)).

This pilot of economic safety net cash transfer program, targeted specifically for the marine artisanal fisheries sector demonstrates how it might be possible to implement a fisheries closed season and simultaneously address unintended adverse socioeconomic effects associated with management measures through a carefully designed comprehensive strategy with necessary government commitment and investments. A validated [methodological guide](#) was prepared which provides detailed information on the process and impact of this activity on vulnerable fisheries dependent households and for potential applications of the economic safety net cash transfer program to reduce socio-economic impacts of sustainable fisheries management measures such as closed seasons (see text box below).

#### **An Opportunity Using Existing Fisheries Sector Resources**

- SFMP in 2016 estimated that total subsidies to the fisheries sector is about \$44 million/year (Premix and tax waivers). This totals about \$3.6 million subsidies/month.
- During fisheries closure, where government is not required to provide premix fuel for the sector, the savings can be channeled into an Economic Safety Net Scheme for the sector.
- A one-month closed fishing season provides enough savings in pre-mix subsidies to allocate \$52 to 67,000 fisheries dependent households (300,000 fisherfolk) across the four coastal regions in Ghana for that month.

### **COVID 3 - Government of Ghana has evidence on approaches for effective livelihood assistance**

As part of the SFMP COVID-19 response the SFMP tested several diversified livelihood approaches with the view to providing examples that the government of Ghana could replicate and scale in the future that can build fishing household resilience to ecological, economic and pandemic shocks. Expected versus actual results are summarized in Table 18 below.

**Table 18: COVID 3 – Expected versus actual results.**

Expected Results	Actual Results
<ul style="list-style-type: none"> <li>• GoG has evidence for effective livelihoods assistance to fishing communities affected by COVID 19.</li> <li>• 50 individuals received training and or grants for diversified livelihoods</li> </ul>	<ul style="list-style-type: none"> <li>• A methodology for targeting and monitoring of economic assistance to vulnerable fishing households validated.</li> <li>• 138 youth (age 18-35) from fishing households, 83% female, provided diversified livelihoods via training and in-kind grants, and 16 who already completed trade apprenticeships provided in-kind grants.</li> <li>• Average weekly earnings from the diversified livelihoods ranged from US\$ 6.90, US\$ 16.24 and US\$ 30.86 for satellite and TV installation and repair, baking, and soapmaking respectively.</li> </ul>

Artisanal fishing households in Ghana are highly dependent on fishing related livelihoods and typically have few if any non-fishing means of livelihood support. This makes them highly vulnerable to shocks such as occurred in the COVID-19 pandemic or when management measures are implemented that curtails fishing related income such as closed seasons. Empirical evidence globally suggests that developing diversified livelihoods for fishing households is difficult and has high rates of failure for various reasons, making this component challenging, particularly given the short time frame for the COVID response activities.

SFMP tested three livelihood strategies by providing training and in-kind grant support for youth from fishing communities in three different livelihood options. The first was soap making, which SFMP selected to take advantage of the demand for handwashing soap driven by COVID-19 safety protocols. SFMP selected the other two livelihood options (baking of confections and snacks or installation and repair of satellite TVs and air conditioners) based on the results of initial stakeholder outreach to youth from fishing communities and apex fisheries organizations. Respondents suggested these would be popular livelihood options, requiring relatively little training and allowing trained participants to begin earning an income using locally available equipment. Working through partners DAA, CEWEFIA, FoN and HM, SFMP put out a call for applications for participation in livelihoods trainings, ultimately selecting 138 youth (age 18-35) participants from fishing households.

Trainings for the livelihoods options were conducted either at the premises of trainers or at the DAA and CEWEFIA training centers. During the COVID-19 extension, SFMP trained 96 individuals (94 women and 2 men) on the production of handwashing soap. In addition, SFMP trained 42 individuals (21 women and 21 men) on the two other livelihoods options, meeting the target of 30-50 individuals trained. Table 19 below shows the number of participants in each livelihood training type disaggregated by sex.

For all livelihoods, income earned depended on the scale of production, and some respondents indicated they were producing at the barest minimum while others were making good sales. Thirteen participants (54%) responded that the income earned was not adequate to take care of all their needs. Additional time and support could see these incomes rise, but generally results indicate that the tested livelihoods would not provide a strong incentive for fisherfolk to change sectors, which was not the intended objective anyway, and may not be adequate to meet all the needs of a household during economic shocks induced by COVID-19 or a fisheries closed



season. However, they do provide some supplemental income and therefore some measure of added economic resilience.

**Table 19: Breakdown of pilot livelihood options by gender.**

Livelihood Option	Male (%)	Female (%)	Total Participants	In-kind grants per participant (GHS)	Total in-kind grants (GHS)
Production of handwashing soap	2 (2%)	94 (98%)	96	250	24,000
Baking of confection	0	20 (100%)	20	1,275	25,500
Satellite TV & Air Conditioning	21 (96%)	1 (4%)	22	700	15,400
Total	23 (17%)	115 (83%)	138	2,225	65,900

(US\$ 1 = GHS 5.80)

After completing technical training in a specific livelihood, SFMP provided trainees with small in-kind grants of equipment and inputs to ensure they were able to start practicing their livelihood immediately. The size of the grant provided is shown above in Table 19 above. In addition to the 138 participants who took part in SFMP-sponsored livelihoods trainings, the project provided in-kind grant support to 16 individuals who had completed trade apprenticeships elsewhere but could not access the finance to procure the tools and equipment required to launch their businesses. These grantees were selected according to the same criteria as described above, with the additional criterion of having already acquired a skill. They received in-kind grants support averaging GHS 972 per person. Overall, SFMP provided in-kind livelihoods grants to 154 individuals (58 excluding soap producers), exceeding the target of 30-50 grantees.

The project also provided business and financial training to livelihoods program participants to enable trainees to improve their aptitudes and understanding of the dynamics of managing a small business. Thirty-three trainees were trained on business skills and financial management, meeting a target of 30-50 individuals with increased financial management capacity. Due to the short timeframe of the pilot and a lack of interest from some participants, SFMP supported only 18 individuals who did not already have accounts (12 women and 6 men) to open savings accounts at formal financial institutions. SFMP prioritized support for savings over microfinance credit as the high interest rates of credit can be burdensome for businesses in the early start-up phase.

While participant perception of the SFMP livelihoods trainings was positive, the livelihoods program demonstrated mixed results in terms of income generation. In February 2021, three months after technical trainings on livelihoods were completed for the first round of trainees, SFMP carried out a survey of 24 livelihoods training participants. Twenty-one (87.5%) respondents indicated the training content had been adequate and useful, and all but three participants (12.5%) expressed that the in-kind grants received were adequate for their needs. Twenty-two beneficiaries (92%) expressed satisfaction with the training. One soap production trainee and one baking trainee found the trainings inadequate. Of the 24 participants, 16 (66%) expressed a need for longer trainings to learn additional products or for additional experience before beginning to practice their livelihood.

Reported income generation ranged substantially between respondents and was based on the livelihood training in which each participated. The minimum earned per week was GHS 7.5 and the maximum was GHS 350, with a mean of GHS 125 per week. Based on the median income for each livelihood (which ranged from GHS 90 for soap makers to GHS 40 for installation technicians), many participants were earning less than the average income for a fisher (GHS 109) or a fish processor (GHS 250) three months after the conclusion of the livelihoods training. Table 20 presents information on income generated in detail.

**Table 20: Income earned per week.**

<b>Livelihood Option</b>	<b>Median earned (GHS)</b>	<b>Mean earned (GHS)</b>	<b>Minimum per week (GHS)</b>	<b>Maximum per week (GHS)</b>	<b>Sample Size (N)</b>
Production of handwashing soap.	90	179	8	350	12
Baking.	46	95	15	175	7
Installation and repairs of digital TV and air-condition.	40	40	30	50	5

In addition to support for the above-mentioned livelihoods, SFMP through its implementing partners DAA and CEWEFIA explored the possibility of using the *Ahotor* oven to produce edible and marketable products beyond smoked fish using local ingredients. There are currently an estimated 723 *Ahotor* ovens in use by fish processors across Ghana. A brief market survey revealed an interest in the consumption of snacks such as fish nuggets (made with local potatoes and fish), fish or beef pasties, coconut cookies, bread rolls and maize dumplings (locally known as '*abolo*'). SFMP and its partners provided training for 58 women in the production, packaging, labeling and pricing of these products. In order for participants to begin production of these products immediately after the training so they would not lose the knowledge acquired, SFMP provided the trainees with a "starter package" consisting of basic ingredients (flour, butter and spices), packaging materials and labels. As of March 2021, none of the training participants were producing alternative products on the *Ahotor*, as they found the profit margin for these products to be too low to be attractive to them.

## **IMPLEMENTATION CHALLENGES**

### **Strengthened enabling environment for marine resources governance**

The SFMP team was well aware of the challenges of undertaking a policy development process where it was an outside actor and needed to build trust as well as the capability of external stakeholders as well as the decision-making entities it was tasked with influencing. The SFMP team knew that it would have to successfully work with two presidential administrations (an election was slated for 2016, the mid-point of the project) and a new Parliament. However, the project design was not aware of and thus did not take into account the substantial resources made available to the Ministry of Fisheries by the World Bank's West Africa Regional Fisheries Program (WARFP). On the surface the combination of World Bank and USAID funds would seem to be a boon, however the two projects operated under very different ground rules. The Government of Ghana was responsible for directly executing the WARFP, while the SFMP was not well understood by MOFAD and thus required the Fisheries Commission to work through an independent project management unit led by the University of Rhode Island that it was relatively unfamiliar with. The five-year National Marine Fisheries Management Plan published in October 2015 was not available at the outset of the SFMP nor took the project's goals into account, most notably exempting the artisanal sector from the fish stock access controls which were at the heart of the SFMP's results framework.

As the statutory institutions responsible for the formulation and coordination of policies related to fisheries, weakness with respect to the functional and coordinating capacity of the MOFAD and the Fisheries Commission had considerable impact on projects and programs implemented within the sector. Even with WARFP support, the Fisheries Commission remained under-resourced and did not have enough staffing for effective coordination of all projects and programs and effective implementation of their routine management programs. It took the SFMP a few years to establish effective working relationships and overcome slow acceptance by top management of the Fisheries Commission. Initially the SFMP managed to incorporate requests and concerns of the Fisheries Commission by its open approach to annual work planning. In later years, the Fisheries Commission staff anticipated needs that the SFMP was able to address in both work plans and ongoing fisheries management activities.

The weak governance structures of key stakeholder associations (e.g., NAFAG, NAFPTA, GNCFC) who were initially not key implementing partners proved to be a greater than expected obstacle. Fisheries sector stakeholder associations emerged during the life of SFMP as critical players willing to take stands on key issues that create political pressure for action. Improving the governance structures of these associations and increasing their ability to communicate with their members had to be added to the institutional strengthening component. Lack of sufficient government budget and domestic politics combined to dampen the willingness and ability of government to provide this support. The SFMP adjusted its work plans mid-project to provide additional support to national fisheries associations but had less ability to influence this crucial enabling condition for policy reform than its more successful efforts to build the capability of implementing partners.

Fisheries Commission organizational restructuring and functionality improvements anticipated since the beginning of SFMP as a result of WARFP investments did not fully materialize. This was perceived to be a barrier to the Fisheries Commission functioning in a more effective policy development and implementation role. For example, prosecution of illegal practices continued to be perceived as lacking transparency and suffering from selective enforcement actions and lack of effective punishment of offenders. Fisheries Act revisions, a national fisheries co-management policy and three local co-management plans that provide the legal basis for many of the best practices identified and piloted with SFMP support were still pending

in mid-2019 at the time of the final organizational capacity assessment (although the Fisheries Co-management Policy Framework and three Co-Management Plans have since been approved in 2020).

Financial sustainability through tested service provision business models and diversified project, donor, and government budgeting/service provision contracted portfolios remains a challenge for local CSOs/NGOs, regional membership associations, the University of Cape Coast Centre for Coastal Management, and the LUSPA Central Region Training Center.

### **Science and Research Applied to Policy and Management**

An important challenge at the outset and throughout the SFMP was gaining acceptance of the fact that the small pelagics fishery was nearly collapsed. The policy and management frameworks for transitioning current fishing methods and practices to sustainable approaches including Ecosystem Approach to Fisheries Management (EAFM) and Fisheries Co-Management thrive on knowledgeable stakeholders, especially well-informed resource users and their active participation in decision making. To the extent that most of the fishers in the marine artisanal fisheries sector in Ghana are illiterate and did not understand the science behind fisheries management measures such as a closed season, effort and capacity reduction, mesh size regulation, they were not initially willing to comply with fish stock and rebuilding measures. This also partly explains the prevalence and persistence of IUU fishing practices such as the use of dynamite, chemicals and light for fishing at night, all of which have considerable adverse effect of recruitment of juvenile fish species and consequently the achievement of the project goal of ending overfishing and rebuilding targeted fish stocks through adoption of sustainable and responsible fishing practices. The SFMP worked to overcome this fundamental limiting factor by facilitating the involvement of key fishers in fisheries data collection and other action-oriented research programs by the universities, especially UCC and the FSSD so that they can better understand the science behind management interventions and become advocates for change within their scopes of influence. The SFMP's innovative dialogue platform, the Fisher – to – Fisher dialogue process (F2F) also provided the opportunity for the few fishers who understood the issues better to explain to their colleagues the implications of their actions and the measures required to salvage the situation.

While the transformation of fisheries data collection approaches from paper to digital was piloted and generally adopted by the FC/FSSD with accompanying skillsets, important enabling conditions for sustainability of quality fisheries data collection, analysis and application in fisheries management decision-making have not yet been fully secured. Lack of human resources, Fisheries Commission staff training and operating budgets for data collection are still insufficient.

The Fisheries Scientific Survey Division (FSSD) of the Fisheries Commission largely avoided tracking the extent and composition of *saiko* shipments, fearing that monitoring might legitimize the practice and institutionalize it. However, several studies, including one by FSSD point to the detrimental impact of *saiko* operations and its relevance to the rejuvenation and sustainability of the small pelagic species. Fishermen in Elmina often complain about the fact that the Fisheries Enforcement Unit (FEU) selectively confiscated illegal nets but openly ignored the illegal activities of *saiko* operators at the same landing sites. Transparency and fairness in dealing with compliance issues is critical to fostering stakeholder support for fisheries reforms and sustainable management interventions.

### **Creating Constituencies and Stakeholder Engagement**

The SFMP found very early on while preparing its communications strategy that it needed to significantly scale up its constituency building effort. The communications team responsible

for implementing the strategy was comprised the SFMP Communications Officer along with key project staff at SNV and Friends of the Nation and in concert with the Fisheries Commission, MOFAD and the WARFP. The short and long-term objectives of SFMP were to complement, synthesize and enhance the efforts of the FC, MOFAD and WARFP. The two prongs of the strategy were communications related to the project itself, and more importantly the need to carefully coordinate national and regional policy campaigns on emerging technical and scientific information, and policy dialogues timed to match decision processes.

Internally, the SFMP worked to build the capability of implementing partners to prepare reports and insure the consistency of messages in the hundreds of public events carried out. SFMP also worked continuously with journalists to build a deeper understanding of the fisheries crisis and the steps needed to overcome it and to expand the scope and quality of coverage. The SFMP communications strategy had ambitious goals for working with “Fisheries Managers”, however these proved difficult to achieve.

The Fisheries Commission which has the mandate to manage the fisheries resources of Ghana and coordinate policies related to them, does not have a Communications Unit. At the operational level, this created challenges for the SFMP with respect to dovetailing communications related activities to the Commission’s programs in building constituencies. The F2F platform initiated by the project and embraced by the Fisheries Commission and all stakeholders was helpful in filling the gap.

The problem of misinformation and mischaracterization of the needs of the artisanal fisheries sector---for example continued emphasis on subsidies to accelerate exploitation rather than conservation, especially during political campaigns---remained an ongoing frustration. To address this in its final year of implementation and in the run up to the 2020 presidential and parliamentary elections, the project in collaboration with UCC organized the first political party discussion (debate) on fisheries and coastal environmental management challenges which was broadcast live on national radio, television and online. The purpose was to create a levelled playing ground for all political parties to present their perspectives and ideas on rebuilding the fisheries sector in an attempt to move political campaign communications from populist to concrete solutions for the sector as ideas and perspectives expressed by representatives of political parties were subjected to interrogation by a discerning audience of stakeholders who participated in the live program and a well-informed moderator.

### **Applied Management**

The main reasons why the fish stocks have not recovered are several. First, the fishery remains open access which inevitably leads to overfishing and further hastened by generous input subsidies, especially the fuel mix subsidy provided to the artisanal fleet at an estimated cost to government of US \$45 million per year. This situation is on the cusp of change due to SFMP and World Bank support provided to the Fisheries Commission to create a canoe vessel registry and tacit agreement by the National Canoe Fishermen’s Council for a moratorium on further entrants. This agreement, while not yet formalized by the Fisheries Commission with a moratorium declaration, was agreed to through numerous Fisher-to-Fisher dialogues that were supported by the project. Recovery is unlikely be achieved until a greater number of fisheries management measures are effectively implemented. While many are contained in the national fisheries management plan and in the fisheries laws, few are implemented fully by the Fisheries Commission or are effectively complied with the fishing sectors.

It should be noted that the STWG, in its final 2020 report, concluded that there is also overcapacity in the trawler fleet despite significant reductions in the number of licenses provided by the FC over the past several years. While they are licensed to fish demersal stocks,

the illegal capture and transshipment of *saiko* fish has an unquantified impact on the sustainability of the small pelagics stocks as well.

Enforcement of existing fisheries laws and regulations has had serious implications for efforts by the SFMP to make progress with fish stock rebuilding. The previous USAID/ICFG project made some inroads in helping the Fisheries Commission improve the prosecutorial chain. Initial activities built on those successes and were aimed at improving training of the Marine Police as well as increasing the knowledge and support for fishing regulations among the artisanal fishing sector. The Fisheries Watch Volunteers concept was tested and met with some resistance in selected fish landing sites. Efforts to gain support from artisanal fisher organizations such as the GNCFC also remained elusive. A few years later the Fisheries Commission did successfully scale up the concept and established 48 Landing Beach Enforcement Committees (LaBECs) at various beaches in the Central Region. Building on the curriculum guide developed by SFMP, a European Union project trained over 700 fishers in monitoring, surveillance and evidence gathering on land and at sea related to IUU fishing.

However, the interference of politicians in fisheries management, especially in Monitoring, Control and Surveillance (MCS) activities has been one of the major challenges facing the fisheries sector in Ghana. Fishers caught committing serious fisheries law infractions might be able to have their arrests or prosecution overturned by appealing to influential elected officials, undermining the integrity and confidence in the prosecution chain. Fishers represent a very important constituency within the internal geopolitical landscape of Ghana, with coastal constituencies determining the outcomes of both parliamentary and presidential elections. Over the years, this situation has been exploited by the two main political parties in Ghana to the extent that the difficulties to implement science led management measures to rebuild depleted fish stocks and negative practices within the sector such as IUU fishing, open access regime, bad subsidies and *saiko* can be traced to political interference and patronage. The SFMP was not in a position to denounce or mount campaigns against individual politicians, a role played by external actors such as the press, Environmental Justice Foundation and other advocacy groups. SFMP was able to create a better climate for transparency as well as widespread understanding of fisheries policies and regulations among fisherfolks. Comparison of surveys of fisherfolks in 2015 and 2019 showed significant improvements in fisherfolk knowledge and understating of fisheries regulations, but this has not resulted in improved compliance.

The SFMP faced a number of challenges in implementation of its post-harvest improvement activities related primarily to efforts to develop a market for the *Ahotor* oven and advance affordable financing for fish processors. At the start of the project, SFMP's effort to improve the value chain was promoting the large-scale adoption of the "Morrison" smoker that was shown to be a more fuel efficient and cost effective alternative to the *chorkor* smoker. However, after testing of Morrison fish products and *chorkor* fish products, the Morrison smoker produced a product with higher PAH levels (a carcinogen) and the project immediately discontinued its promotion. This introduced a multi-year delay in reaching what seemed to be a relatively straightforward initial goal to significantly scale up more profitable and fuel-efficient smokers. This required the development of entirely new design, which came to be called the *Ahotor* oven. It was not until Year 3 of the project that this technology was fully proven, having been developed in cooperation with artisan fish smokers and the Ghana Standards Authority, and ready for widescale roll out.

The roll-out faced its own round of challenges. Since the *Ahotor* oven is more difficult to build than the *Chorkor*, specialized technical skills and trained artisans are required. There is greater room for error in construction, and a higher risk for quality control issues, as was soon seen in

some of the early *Ahotor* installations. This was also attributed to processors not using the ovens as instructed. Those early quality control issues had the unanticipated knock-on effect of negatively affecting the adoption of the *Ahotor*. Poor construction of early *Ahotor* ovens lowered processor confidence in the design, which was hard to regain.

To address previous substandard construction, the project replaced poorly constructed ovens for processors. The SFMP communication team worked to address user training gaps by revising the *Ahotor* oven user guide and producing it in poster form with pictures and subtitles in four coastal languages (Fante, Ewe, Ga and English). SFMP worked to retrain and develop a network of artisans along the entire coastline to overcome the quality construction challenge. This was one of the most successful components of the *Ahotor* market development strategy. The artisans formed a networking and knowledge-sharing platform which they are using to share updated construction methods. For example, one artisan found a way to use Propane gas instead of fuel wood for the oven and shared the design for this innovation on the platform.

The technical specifications and skills needed for quality construction became part of the added cost for the smoker. The key advantage of the *Ahotor* is its price when compared with the other available models with comparable health and efficiency outcomes (GHS 3,000 for double unit with 20 trays, compared with the GHS 8,000 for an FTT oven for 1 unit with trays). While the up-front costs are higher, over time, the *Ahotor* is more profitable than the traditional *Chorkor* oven. The low fuel wood consumption still allows for a good internal rate of return and improves profitability to the fish processor once the initial capital construction costs are paid off. Unfortunately, the target market (mid-level processors – not the poorest and not the wealthiest) found the upfront costs too high, even after SFMP's efforts at financing and promotion.

Confident of the long term financial viability of the stove, the SFMP promoted a market based approach for adoption and scale up and initially attempted to use rural bank and microfinancing institutions as the vehicle for financing of construction for fish processors. However, the SFMP encountered considerable reluctance to loan to the fisheries sector and even worse, high interest rates made this safe, efficient stove a difficult purchase for most small-scale processors. In the end, SFMP and the Fisheries Commission concluded that significant subsidies for the *Ahotor* in the early phases of scale-up were needed until the *Ahotor* technology becomes widespread enough to generate its own demand based on the success of early adopters. In practice, the *Ahotor* was not accessible to early adopters unless at least 88% of construction cost (including fish smoking trays) was subsidized. Any notion of a price premium for cleaner, healthy fish---the theme of a SFMP communications campaign---being sufficient in itself to foster rapid adoption did not prove itself.

Facilitating access to micro-finance for processors to address this barrier was more complex and difficult than expected. SFMP therefore, changed its approach and supported the establishment of VSLAs and cooperated with MASLOC, the government sponsored microfinance program with discounted interest rates, to provide financing mechanisms for these women businesses. A viable market-led micro-finance solution to providing a significant number of processors access to sufficient credit for purchase of an *Ahotor* oven (and for working capital) remains a challenge. Factors such as low verbal and financial literacy rates of processors, weak relationships and low level of trust between processors and financial institutions, lack of viable loan collateral for borrowing, and high mobility of fish processors all contribute to this situation.

Finally, the decline in landings of small pelagic fish in Ghana has discouraged widespread adoption of this new technology, chiefly because it requires significant capital investment at a time when artisanal fish processors are already under increasing economic stress with shortages

of local supply of fish for smoking. Due to low catch, processors often must purchase more expensive local or imported frozen fish to process in order to maintain efficient levels of production. Many processors realize that increasing post-harvest value chain efficiency and entering higher value markets may be the only way to maintain viable livelihoods in a context of shrinking supply and higher prices for primary products. As fish stocks dwindle, reducing post-harvest losses and maximizing income from the limited catch become ever more necessary, but processors continue to find their transition to improved technology hampered by financial constraints and perceived risk.

## **Gender**

The SFMP knew from the outset that low literacy levels and women's traditional roles have been major barriers in mainstreaming gender in fisheries management. Women generally have remained passive and expect men to lead discussions on sustainable fisheries management.

Low literacy levels among women also limits the effectiveness of the delivery of interventions, especially those that rely on technology such as the use of digital financial tools that give women greater control of their resources. Women in fish processing learn the trade from a relative at an early age, and as a result often forgo formal education and drop out of school. Consequently, women grow up lacking foundational skills necessary to use simple, beneficial technologies. In West Africa, studies have shown that the use of mobile money rather than physical cash can increase household savings by more than 20%, can help to reduce extreme poverty, and increase household bargaining power for women ([Acker et al., 2016](#)). Low literacy and numeracy prevent women from benefiting from mobile money and similar technologies.

While the SFMP enjoyed considerable success in working with partners such as DAA and CEWEFIA in reaching thousands of women engaged in the fisheries value chain, it found that the leadership of national level women's organizations (e.g., NAFPTA) largely failed to galvanize their constituents to effectively participate in decision-making processes and take ownership of opportunities offered to them. This failure by the few women leaders in the fisheries sector to nurture leadership qualities of their constituents remains a serious obstacle for the scale-up of otherwise promising demonstrations of improvement in women's engagement supported by the project.

## **Capacity Development of Targeted Institutions**

SFMP was successful in improving the capability of its implementing partners and conducted assessments and supported capacity development of other national actors (government and national fisheries associations) but was not in as strong a position to affect their trajectory. The nascent status and critical gaps in organizational capacity of national membership associations constitutes a major challenge for their contribution to sustainable management of the small pelagic fishery. Conflicts in the relationship between the Ministry and the GNCFC presented one of the most significant barriers to progress on implementing urgently needed fisheries management measures. While there is general agreement on the urgency for concerted action to reduce over-exploitation of the small pelagic fishery, conflicts tended to be around issues of process, relationship management, and trust. This is not considered a permanent feature of the fisheries sector institutional map for Ghana, and likely will evolve as government administrations change and evolve, and as governance of the member associations develops.

## **The COVID Response**

Over time and with frequent use, some of the handwashing stations deployed by the project broke down and were immediately fixed by plumbers from the community under the supervision of the site advocate and SFMP's implementing partner in that region. The broader



question is whether the effort to mitigate COVID-19 will transform into much needed attention to the poor water and sanitation conditions afflicting fishing communities.

The SFMP had to quickly plan and implement the pilot economic safety net cash transfer program for poor and vulnerable fisheries dependent households. The time pressure faced by the SFMP revealed a number of gaps that will be important in any scale up of the generally successful transfer program will have to address. Poor coordination characterized relationships among GNCFC, NAFPTA and the SFMP Implementing Partners (DAA, CEWEFIA, Friends of the Nation and Hen Mpoano). The GNCFC and the NAFPTA remain the two largest membership associations operating within the marine artisanal sector and are national in scope. As a result, weaknesses in the functional and institutional structures and processes of these associations will have adverse implications for the sector. This made it difficult for the SFMP Implementing Partners to coordinate effectively with them during the implementation of this pilot intervention, especially during the selection of potential beneficiary households. Scale-up using national fisheries associations will need to be preceded by strengthening the functional and institutional structures.

Much lower-than-expected overlap between the two beneficiary selection processes meant that a large number of potential beneficiaries had to be verified using a more cumbersome approach, the Proxy Means Test (PPI survey). This is probably a reflection of the level of poverty within the sector to the extent that so many households fell within the bracket and fit the parameters of the selection criteria. However, phone polling using PPI showed many that were nominated to have low probabilities of being poor. Those with the lowest probability were culled from the lists. It is therefore imperative for government to ascertain the size of the category of the fisherfolk population which is truly poor and vulnerable in order to make appropriate budgetary allocation in the design of an economic safety net scheme as a component of an integrated sustainable fisheries management intervention involving stock rebuilding strategies/plans. This remains largely an unknown and while poverty rates in coastal districts are lower than Northern districts in Ghana, deep pockets of poverty in coastal fishing communities in particular continues to be asserted with little empirical evidence.

A large proportion of the poor and vulnerable households did not have their own telephone numbers in spite of the fact that surveys showed cell phone ownership in fishing households at over 90 percent. Out of the initial 2,000 beneficiaries selected, approximately 1,500, representing 75% did not own their own phones and did not have mobile money accounts despite the widespread use of mobile money in Ghana (about 40-45 % of adults). This was probably due to their low income. The cost of a mobile phone handset with basic features costs about \$10. They also lack the literacy and numeracy skills to operate the functions of the platform. As a result, selected households could not receive their cash transfer on the mobile money platform easily. This created a challenge in the use of more efficient digital techniques to facilitate payments and many had to be reached through intermediaries in the community such as the Chief Fishermen. SFMP staff had to call each of these beneficiaries and ask them to obtain a SIM and register on the mobile money platform. Despite the many follow up calls, 15 of them could still not be reached.

Response rates of the automatic phone polling when the PPI was administered to selected potential beneficiaries was low. Most potential beneficiaries had to be reached by in person calling to conduct the PPI survey. Even with that method, enumerators could only reach 2,037 beneficiaries, meaning that only 2,179 out of the 3,220 were vetted or validated. The final 2,000 beneficiaries were therefore selected from the 2,203 potential beneficiaries.

Challenges encountered during the implementation of the diversified livelihood activities centered primarily on the short timeframe of the livelihoods pilot and the challenging context

of coastal communities. As the livelihoods pilot ran from June 2020 – March 2021, SFMP had relatively limited time to identify and deploy innovative and commercially viable livelihood options. SFMP prioritized livelihoods that the beneficiaries could easily adopt and be able to generate income within the 10-month pilot, which precluded development of relationships with existing technical and vocational education and training centers, workforce development programs, or potential private sector employers which would be better placed to provide more in-depth training courses, tangible employment options, and to eventually scale support broadly to Ghana’s coastal communities. Within the pilot period, trainees were able to produce income, but most did not exceed or match the income that participants could normally earn in fisheries jobs.

Participants lacked information on possible livelihood options outside of the fisheries sector, and low literacy and limited access to financial resources also constrained their potential options. SFMP also observed gendered differences in the interest and choice of livelihood options by participants, stemming from the idea that some livelihood options are typically male oriented and vice versa others female. During the livelihood pilot, for example, trainees in handwashing soap production and baking were almost entirely women, while nearly all the trainees who chose satellite TV installation and air conditioning repair were male. SFMP’s strategy to focus on women and initial stakeholder outreach and engagement may have exacerbated this. Around 87% of participants were women, and this may have influenced the selection of livelihoods included in the pilot towards those favored by women.

Finally, none of the fish processors engaged in the market study and trainings on production of alternative product on the *Ahotor* oven continued producing or selling alternative products. They note that the profit margins on the sale of pilot products is small compared to those from fish smoking, and so they prefer to continue smoking fish.

## LESSONS LEARNED

### Strengthened Enabling Environment for Marine Resources Governance

**Program work and strategies need to realistically adjust expectations to match the capacity of the Fisheries Commission to implement.** It was not surprising that the SFMP had to carefully monitor and adjust the pace of policy formulation to a political and policy environment and related requirements that can drive or compromise project engagements. Delivery of policy results requires tolerance for intermittent forward and backward movements in the engagement process. The Fisheries Commission rejected SFMP's efforts to prepare a demersal fisheries plan for the Western Region. The Fisheries Watch Volunteers program was suspended due to unanticipated local resistance in a key location, although captured in the 2018 Ministry of Finance budget proposal to Parliament. Bureaucratic processes can be laboriously and frustratingly slow to the extent that it throws programing and budgets out of planned cycles. To be effective, projects must remain responsive and adapt to the dynamic and bureaucratic processes of government.

**Political interference in fisheries enforcement and Chinese influences concerning the trawl sector and “saiko” are wicked problems that are difficult for projects to influence.** Relationships and influences in the political economy are often not visible or, when they seem to be, can be deceptive. Effective navigation of these complexities means that interim plans must change while loosely keeping in mind project timelines and related outcomes. The importance of continuous engagement, understanding, and support to key counterparts cannot be overstated. The SFMP increased its effort to minimize the political divide through dialogue on substantive issues. It relied on its implementing partners for much of this work but also recognized the need to increase the engagement and visibility of the Fisheries Commission as a leader of these dialogues. Circumstances around the fisheries sector, such as political influence in the provision of input subsidies and selective interference with fisheries enforcement for electoral capital, meant that it was important for non-political and external actors to improve the substance of dialogue and facilitate processes that minimize the role of politics in fisheries management and law enforcement processes. Using the dialogues to introduce science-based information provided through the Fisheries Science and Technical Working Group was considered above any political interests and their reports have become one of the most cited and reliable sources of information by all stakeholders.

**While necessary, collaboration and engagement are not sufficient to achieve sustainable management of fisheries resources. Successful arrest and prosecution of those who violate fisheries laws is also required.** In Ghana, enforcement eventually must include a collaborative effort with community members who can assist in reporting and serving as witnesses in enforcement actions. Also, to achieve effective prosecution, a high level of professionalism and forensic competence must be developed in the rank and file of the enforcement agencies, especially in evidence gathering and processing, and presentation of evidence in court. Voluntary compliance via moral suasion and coercive compliance via effective deterrence are both needed to reduce illegal fishing.

**Active coordination of all fisheries sector projects reduces duplication of effort and confusion among communities and makes more effective use of available resources.** In December of 2017, SFMP hosted a “Development Partner Project Meeting” that focused on initiating and sustaining cooperation and information sharing among similar donor funded projects within the sector. The meeting proposed cooperation and cost sharing arrangements among donor funded projects for the fisheries sector to address issues related to duplication of efforts and reduction of confusion among communities in which multiple projects worked. This

regular practice would be most effective if led by the Fisheries Commission rather than any project or a donor and institutionalized.

### **Science and Research Applied to Policy and Management**

**The SFMP emphasis on improving the scientific basis for fisheries management decision-making, first of all by documenting and gaining widespread acknowledgement of the depth of the crisis, moved stakeholder discussions from not accepting a problem or pointing fingers of who was to blame to discussions about appropriate choices of management actions.** The SFMP succeeded in boosting Ghana's ability to generate reliable information for fisheries management decisions, and to focus attention on the resilience of fishing communities and fish processing infrastructure. Following approval of the fisheries co-management policy, the Fisheries Commission is mandated to set up a Science and Technical Committee (recommended by the SFMP as Science and Technical Working Group). If properly constituted and established, the Science and Technical Committee can provide a dependable and credible source of information and advise the Fisheries Commission on the development, collection, evaluation, and peer review of information relevant to the sustainable management of the fisheries resources of Ghana. This will move decision making into a more formal science and evidence based process.

**Significant stakeholder engagement in the analysis and discussion of evidence, formulation and implementation of key management measures is critical to success.** Even the slightest delay in bringing stakeholders into the process has the potential to reduce ownership. As an example, even though the Science and Technical Working Group (STWG) is made up of representatives from all the key marine fisheries associations, it failed to recognize the key role of the National Fisheries and Association of Ghana (NAFAG) in the implementation of fisheries management measures. Due to the vague organizational structure of NAFAG and issues between NAFAG and other associations as to its' validity as the true umbrella of all fisheries associations in Ghana, NAFAG was often left out of stakeholder engagements. Key members of the association were never involved in STWG's activities yet NAFAG was chosen by the Minister to lead a process that resulted in a proposed timing for the 2019 closed season inconsistent with the STWG findings. Effective engagement of all key and relevant associations in the management of the marine fisheries sector is important for successful implementation of conservation measures with high voluntary compliance.

**Building bridges between Local Ecological Knowledge and academic research energized student researchers and faculty to engage in adaptive management.** The principal factors contributing to the success of UCC/DFAS and the achievement its objectives, and in fact, exceeding expectations, include the emphasis placed on effective communication and integration of participatory research that energized student researchers and faculty to engage in adaptive management. It brought together a diversity of stakeholders for the common goal and built a bridge between local ecological knowledge of fishers and experimental research that is continuing with World Bank support to UCC through the UCC African Center of Excellence for Coastal Resilience.

### **Creating Constituencies and Stakeholder Engagement**

**Commitment to developing and implementing an integrated communication strategy to facilitate engagement of fisheries stakeholders---including the national government---was critical to advancing enabling conditions for fisheries reform.** Elevating stakeholder voices and views into national discussions on fisheries policy and management decisions at all levels to restore fish stocks was a key SFMP strategy. Over the life of the project, this resulted in institutional change in the way organizations and individuals understood and expected

performance and engagement. At the same time, this approach intensified and amplified public demand for better performance on the part of government as awareness among fishermen in communities increased.

**Fishermen-to-Fishermen dialogues and political level interactions with the Ministry, Fisheries Commission, leaders of associations, traditional authorities were critical to modeling the behaviors required in a co-management process.** The pursuit of innovative approaches to stakeholder engagement platforms such as the Fisher-to-Fisher program, led initially by the GNCFC and later involved staff of the Fisheries Commission, allowed fisheries stakeholders to interact with each other on key issues in a way that resonated within their individual communities. This enhanced their knowledge of fisheries issues, particularly implementation of the National Marine Fisheries Management Plan, but also gave them an important sense of participation and increased agency in decisions affecting their livelihoods. Change champions emerged through SFMP's high intensity stakeholder engagement process who otherwise might not have found an opportunity for their own individual agency. Many of these became vocal proponents of reforms which ultimately were critical to advancing the fisheries reform process. However, when dealing with the government bureaucracy in policy and legal reform, it is important to provide consistent support to stakeholder groups to build trust and provide an opportunity for them to learn and create their own dialogue to enable them to articulate and demand desired change. Active involvement of the Fisheries Commission was also a critical element. The Fisheries Commission has the mandate to manage fisheries resources of Ghana and coordinate the policies in relation to them. Through the F2F dialogues initiated and facilitated by the SFMP, the MOFAD/FC was able to engage fishers and built consensus on the implementation of the first closed season for the marine artisanal fisheries sector. The F2F has provided the opportunity for the Fisheries Commission to also engage fishers on other important management measures such as the implementation of the Canoe Identification Card and the Co-Management Policy for the fisheries sector.

**Leveraging celebrity power in fisheries communication was very successful.** The two campaign songs produced by the SFMP in collaboration with one of Ghana's popular musicians Martin King Arthur, popularly known as Kofi Kinaata, one in respect to implementation of the fisheries closed season and the other for the prevention of infection and spread of the coronavirus disease proved to be very successful. The use of celebrity power in future communications campaigns on issues related to the fisheries sector is worth exploring, especially in building social capital for collective action.

**Tailoring information, education and communication (IEC) materials to the needs of fisheries sector audiences was required.** Given the high illiteracy among fisherfolks, the production of infographics in the major languages spoken by fishers was recommended by fishers themselves and proved to be effective in getting specific messages through to fishers, as many people are able to read their own local languages with associated graphics. Animations in dubbed in local languages also proved to be effective communication tools.

**Digital communication channels can be used effectively.** Given the steady penetration of smart phones into the general population in Ghana, SFMP explored and identified that the use of social media and virtual meeting platforms could be used effectively to reach out to a large proportion of fishers. In turn, they can subsequently continue the information dissemination process through word of mouth among segments of the fisher populations who do not have access to smart phones or computers. Campaign songs, animations and infographics developed by the project were shared multiple times on various social media platforms in addition to dissemination via the traditional channels of radio and television.

**Involving the hierarchy of fisher associations in formulation and dissemination of key communication messages increases buy-in.** Although Ghana's two main fisherfolk associations, GNCFC and NAFPTA, still require some level of restructuring and capacity building in order to be more representative of and accountable to their constituencies and to be more effective actors in fisheries reform, the engagement of the executives of these associations in communication planning introduced the elements of buy-in and ownership of communications processes and subsequently enhanced compliance with some fisheries management measures such as the closed season.

### **Applied Management**

**In the estuarine fisheries co-management planning process in Ghana, community consensus on governance arrangements and management measures, and the initial results perceived, drove effective implementation of these plans for three years before official approval by the government.** This reinforced and demonstrated an important shift in mentality that SFMP sought to catalyze among stakeholders in the sector. This was the realization that proactive, consensus driven action can be taken by resource users with the urgency and high levels of compliance required to positively impact fishing livelihoods and sustainable resource management. Government in some instances can be better positioned to support, rather than lead such efforts.

**The attempted 2018 closed season failure demonstrated at national and local scales that policies and management actions must be demand-driven and bottom-up.** As one Fisheries Commission official stated at the time: “the paddle has broken the pen!” implying the need to have fishermen and their associations on-board and supporting any decisions concerning new management measures before they are officially carried out. This new attitude of inclusiveness is a sea change for Ghana.

The higher profile of the GNCFC and NAFPTA leadership in national advocacy for fisheries reform and co-management signals a new order for public participation in sustainable fisheries management. However, these associations are still weak and initial gains could fade without stronger internal systems. An example of this is the GNCFC press conference prior to the 2019 closed season where members started arguing in front of press over the preferred closed season timing. Largely due to lack of internal GNCFC ability to effectively reach its membership, it caught leadership by surprise and demonstrated that not all members were unified in supporting the leadership position.

**You can “Sail the ship while building it.”** Action learning was important in demonstrating success in co-management even without formalized policy and legal frameworks. The project modeled the institutions and behaviors as they needed to be reflected in formal policy and legal frameworks in an ad hoc but purposeful way at the local level in the three estuaries, through the Fisher-to-Fisher dialogues, through engagement of associations and their membership in direct dialogues with the government. Stakeholders were able to personally experience the value of co-management, ensuring that the lessons of their experience were incorporated into final versions of the co-management policy and captured in drafting instructions for a new fisheries law. The new co-management policy provides opportunities for the Fisheries Commission and stakeholders to put in place institutional structures to replace the project initiatives of SFMP. Establishing committees, training in community organization, community leadership, and conflict resolution are critical to action learning processes to institutionalize co-management. The Fisheries Commission has recently stated the desire to set up a small pelagic co-management committee as called for in the approved policy and is working to integrate budget allocations annually for implementation of the policy now. Support at a political level will continue to be needed to make it work.

**The high degree of voluntary compliance with the 2019 closed season owes much to the engagement and recognized value of the influence of traditional leaders and chief fishermen.** While formal structures continue as the law of the land, traditional authorities hold considerable power of moral suasion with their peers. The SFMP all-in strategy that included national government, local government, traditional leaders, women and civil society organizations eventually achieved the needed critical mass for adoption of the first ever artisanal fishery closed season in Ghana. In addition, SFMP direct engagement and mobilization of national, regional, and local media in 2018 and 2019 played a key role in developing public and political support. It is important to recognize and accept that the process toward co-management in Ghana, including modeling co-management structures and using inclusive, co-management approaches to support policy and legal reform, was messy, loud, and contentious at times, but necessary for ownership and action. While the 2019 closure was not at the optimal time (peak spawning season), stakeholders and government agreed that if the monitoring showed this was wrong, they were willing to move the closed season to a more scientifically recommended timing. This has occurred with the declaration of a July 2021 closure. The lesson here is that widespread engagement results in stronger constituencies in support of management actions and eventual adjustment of government roles. It also demonstrates that with open and on-going communications among all, adaptive management through trial and error and adjustment can result in significant progress for sustaining healthy fisheries resources in Ghana.

**The co-management process supported by SFMP in Ghana also demonstrated the value and influence of science-based decision making.** Throughout implementation of the project, and the contentious policy and governance decisions that were made, no one tried to discredit the Science and Technical Working Group's findings of a collapsing fishery or the recommendation on the best timing for a closure. The STWG report was cited frequently by all groups and in the media. The quality of discussions among government and fisherfolk from the early years to later period of the project changed dramatically as a result of an established non-political, scientific body providing recommendations and information. Involvement of fisherfolk in stock assessment and the closed season assessment helped build a better understanding of the role of science, and ultimately stakeholder support for science-based decisions. While decisions on fishery management are ultimately political in nature and attempt to factor in social and cultural considerations, the value of establishing an independent scientific body cannot be overstated.

**The community-based management approach demonstrated quick small-scale examples of successful closures that helped bolster arguments in 2019 for its replication in the marine sector.** While probably not critical in tipping the balance of opinion for the marine closure, they did provide tangible local evidence of potential efficacy. These were started late in the project and in hindsight perhaps could have been started much earlier when these small-scale tangible successes could have been used more effectively in the communications for a coast-wide fishery closure.

**It is difficult to tease out the specific degree of influence women had on final decisions about co-management and related policy issues such as the closed season.** However, observing women's support in meetings directly with the Minister made sure that an important constituency did have increased agency over the life of the SFMP. The Densu oyster harvesters, predominantly women, became a voice for collective action by women in Ghana and regionally in West Africa through learning exchanges and shared training. They demonstrated that if given the authority, tools, and knowledge, women will play lead roles in implementation of co-management across Ghana.

**SFMP believes a market-based approach will still prove to be the most effective strategy for sustained and widespread diffusion of the *Ahotor* oven at scale, but the enabling conditions in Ghana’s post-harvest processing sector are still not conducive to achieving the critical mass of early adopters needed to catalyze the rapid and sustainable diffusion of this innovation.** The project had an early set back with its post-harvest activities when SFMP and its partners in the government, NGO, and the fish processing sector had to take the bold step of stopping a key project activity in its tracks when high PAH levels in smoked fish using the Morrison stove were discovered. The *Ahotor* oven developed as a result bridges the gap between the lowest cost, unhealthiest and most environmentally unsustainable traditional fish processing methods used by 70% of processors and the \$1000 FTT-Thiaroye improved oven that is out of reach economically for all but a few. However, the increased cost over the traditional *chorkor* smoking technology coupled with a declining abundance of fish to process inhibited *Ahotor* adoption by large numbers of fish processors. Even with high subsidies for the initial investment, there remains a need to increase processor capacity to use the oven and to develop viable credit mechanisms that align processor needs and financial means with the requirements of banks, government agencies and micro-lending institutions to sustain diffusion of the *Ahotor* technology. The recovery and sustainable management of the small pelagic fishery is ultimately the most critical enabling condition for sustained market-based transformation of post-harvest value chain; when fish are scarce, investment in an expensive new oven is a risky proposition. On the other hand, SFMP support led post-harvest stakeholders to become demonstrably more aware of the powerful role they can play as market actors in the sustainable management of the small pelagic fishery that their livelihoods depend on.

**To achieve widespread scale up of the Class 1 Certification Scheme, some key enabling conditions must be met.** The Class 1 Certification Scheme – a locally owned, institutionalized, standardized, nationally recognized and reasonably attainable quality certification scheme for artisanal fish processing units – is demonstrating promise as a sustainable approach for incentivizing the adoption of good practices in the production and trade of quality fisheries products. The Class 1 scheme and its recognition label have the potential to develop and increase processor access to higher value markets. However, consumers are not yet familiar with the certification scheme or its label, and in fact consumer awareness of quality concerns and health risks for processed fish products in Ghana remains low. Price premiums and profit margins based on the value added of certification are yet to be proven as either likely or sufficient to foster greater adoption but could strongly incentivize adoption of the *Ahotor* oven and certification. Moving into higher-value markets will require production of sufficient volumes of Class 1 certified fish to ensure a reliable supply to higher-value wholesalers and retailers. While progress on these issues will be needed, a strong consortium of Ghanaian government and non-government organizations has taken ownership and financial support of the certification process, and SFMP built the capacity of processing organizations like DAA and CEWEFIA to train processors at two modern training and processing centers, factors that can drive the scheme’s development and sustainability.

### **Gender Mainstreaming**

**Extending the Voice of Women Beyond Fish Processing into Fisheries Governance is both necessary and entirely feasible.** The low education status of women, combined with Ghana’s patriarchal culture has inhibited their ability to contribute or make decisions that influence fisheries policy direction and management strategies. However, among the 1,018 women who were trained on leadership and advocacy skills since the beginning of SFMP, most have made some kind of impact in their communities, especially in terms of support for implementation and benefits of observing the artisanal closed season. Most members of fish processor associations associated with SFMP strongly supported the 2018 and 2019 closed season



declarations by the Minister. An SFMP 2018 Snapshot Organizational Capacity Assessment found that SFMP's training and educational opportunities contributed to women processors' advocacy on the closed season and other key fisheries management issues.

Focusing mainly on a selected group of leaders and members of women's associations, much progress was made but there is significant potential for women to become a much larger and organized voice for sustainable fisheries management in Ghana. Providing opportunities for leadership development, business and organizational training at a larger scale and increasing literacy and numeracy among women in fishing communities is needed.

A quantitative evaluation in 2017 to examine the progress and effectiveness of microfinance and business development support found that microfinance business training and introduction of Village Savings and Loan Associations (VSLAs) had the potential to fill a critical gap in access to capital for women fish processors. The training that SFMP provided alongside VSLA formation strengthened some micro, small and medium-scale enterprises (McNally et al. 2018). Almost all VSLA participants (95%) were satisfied with this type of micro-credit intervention and reported that they expected it would help them build their businesses and provide for their families.

### **Capacity Development of Targeted Institutions**

**The SFMP organizational capacity assessment and development initiative helped all stakeholder organizations to clarify and more deeply understand their unique institutional roles in the sector, and their status as contributors to the enabling environment and as resource managers for sustainable fisheries management.**

Civil society enabling organizations: Local NGO and regional membership association implementing partners of SFMP measurably increased their contributions to the enabling environment for sustainable fisheries management. They increased organizational capacity and began inserting themselves more confidently and forcefully into national dialogues. This resulted in a more robust local NGO and regional membership association presence in fisheries sector political processes than was present prior to SFMP.

Public sector enabling organizations: UCC/DFAS and CCM are now poised to be fully engaged by the government and development partners to contribute to the enabling environment for sustainable fisheries management. This is evidenced by the World Bank award to UCC as an African Centre of Excellence. Working with universities as a critical part of the institutional ecosystem in Ghana is critical for sustained progress in coastal and fisheries management in Ghana. With the progress under USAID support, the UCC now is positioned to anchor a national network such as could be adapted from the US Sea Grant University system in the United States. The dual degree relationship between UCC and URI further enables UCC to effectively contribute to higher quality development and implementation of sustainable fisheries management policy and planning as a non-partisan, science-based institution. Currently, UCC provides an opportunity with its new focus on off-campus extension and outreach, and direct stakeholder engagement providing evidence-based research, advisory support, and communications and outreach. Importantly, under the direct USAID funded grant, UCC intentionally more than doubled the representation of women students in fisheries science related studies. Institutional development and cooperation across ministries will be important to grow a sustained fisheries sector that can absorb the increase in qualified research professionals, particularly from a gender equity perspective. The approach of having UCC manage a direct grant and have the SFMP provide another layer of support worked due to close coordination between the institutions and MOUs developed early on in the life of both projects.

Government management authorities: MOFAD and the Fisheries Commission are Ghana's primary fisheries management authorities. The Fisheries Commission's attitudes have shifted based on a deeper understanding of the mutual interest of government and civil society. Government capacity parallel with civil society organization capacity development has resulted in a new level of receptivity on both sides to open cooperation while each maintains its special role within Ghana's institutional setting. Capacity development under SFMP measurably contributed to the emergence of stronger, more transparent and more accountable governance practices within Fisheries Commission divisions and units parallel to stronger presence and involvement of national and regional civil society organizations representing or directly involved with artisanal fishermen and processors.

Civil society resource user organizations: National membership associations represent resource users whose behavior ultimately impacts sustainable management of the resource directly. These associations have an increased understanding of their potential as leaders of sustainable fisheries management in Ghana, and of strategic approaches for achieving that goal. At the same time, the OCA process and capacity development support provided by SFMP gave their leadership and many of their members an understanding of the significant gaps that exist between their organizational reality and the vision of a well-managed, transparent and accountable national association that effectively represents and enables its constituents.

**The organizational capacity assessment and development process conducted simultaneously with multiple organizations resulted in peer-to-peer learning.** The simultaneous process also motivated organizations to take the OCA process more seriously as a mechanism to identify and adopt best practices. This was especially the case as civil society organizations that had improved their governance, standard operating procedures and financial management systems were able to attract new funding from donors. Local SFMP implementing partners are now carrying out their own voluntarily periodic internal and external assessments.

**OCA tools and approaches can be better adapted when more closely designed by organization type.** Analysis of the five-year application of the OCA process to the SFMP portfolio of partners revealed that support to national membership associations in particular could have benefitted from a tool that focused more on the structural challenges they face, such as staffing strategies, collection of membership dues and related systems, and national outreach, rather than focusing more tightly on charters, election of officers, and board structures.

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## **COVID Response**

**Even when needs were urgent and timelines extremely limited, conducting audience research and engaging stakeholders in the development and implementation of SFMP’s social and behavior change communications strategy was integral to the positive results achieved.** An extensive behavior change communication campaign on TV, social media, music video and radio and on the ground in fishing communities tailored to fisherfolks reached 300 fish landing sites. This strategy and its components were audience specific and proved effective. Audience research and community involvement was critical for ensuring the acceptance and sustainability of the intervention. The SFMP also used images that represent the audience. Frequently, images of Caucasians are used in communicating to Africans. This can lead to a rejection of the messages as the African audience does not believe he/she is vulnerable because the image depicted does not represent an African. The SFMP at all times used images, situations, and symbols that represented Ghanaians, and also fisherfolk.

Fisherfolk include women. Making sure all messages were gender appropriate and sensitive was at the core of the strategy. Women were not depicted in situations that did not accurately represent their roles in society. Women were depicted as equal resource users. Since the intervention was addressing a global pandemic, the IEC materials developed had to undergo a robust review processes by USAID, URI/CRC, MoFAD/FC, Ministry of Health, Ministry of Information, and the Ghana Health Service. This was to ensure that the messages being diffused were accurate and in line with the Government of Ghana’s guidelines.

Lessons from the SFMP’s overall communications effort were applied to the COVID-19 education element. Most notably, the campaign song by one of Ghana’s leading pop stars, Kofi Kinaata, was an instant hit song. It was a form of “*edutainment*” (education-entertainment).

**The deployment of the handwashing stations was critical in the success of SFMP’s SBCC strategy, as community members had an opportunity to practice the information received from the IEC materials.** The deployment of handwashing stations to active fish landing and processing sites was based on a baseline survey of all fish landing and processing sites along the four coastal regions of Ghana by UCC. This baseline provided useful information as many of the landing sites in the FC Frame survey were inactive, were very small, or had only one or a few canoes, or were geographically very isolated. The baseline also provided information about existing conditions (number of Veronica buckets on site – problems of no soap and water availability). This helped SFMP tailor implementation more appropriately to site-based needs. At the onset of the COVID pandemic, some government agencies and institutions also deployed handwashing stations for use by the public. However, most were abandoned as they were not manned. SFMP’s strategy of training community members as advocates, providing a supply of consumables and the provision of stipends, ensured that all 242 were well maintained and ready for use. When problems did arise and stations became broken, the WhatsApp platforms were instrumental in getting that information to partners quickly so that they could be fixed by local artisans and put back into use as quickly as possible.

**Use of mobile money as the mode of payment for SFMP’s Economic Safety Net Scheme targeting 2000 extremely vulnerable fisheries dependent households in order to prevent the spread of COVID-19 and for operational and cost-efficiency was less efficient than expected.** . As discussed in the Implementation Challenges section, 75% of selected beneficiary households turned out not to own mobile phones. As a result, flexibility was required during implementation to add human resources, level of effort and increase the time allocated for administration and logistics for this activity. More time and resources are also needed to train up beneficiaries in mobile phone and mobile money use. However, facilitating payment through Mobile Money Platforms is still viewed as a good option for delivery of cash

transfer programs and essential for any successful scale up. An unintended output was that the mode of payment precipitated the opportunity for more than 1000 poor and vulnerable households to be integrated into Ghana's digital financial economy. Use of mobile money to create financial inclusion for fisherfolk, especially poor households is, however, challenging.

Outsourcing competencies that are outside the scope of implementing institutions was also critical for efficient implementation. When selecting mobile money as the payment method, engaging the services of a technology service provider capable of effecting payment to beneficiaries in mass and generating transaction execution reports is a necessity.

**The design principle of social inclusion led to engaging beneficiaries of the Economic Safety Net Scheme from the beginning in all stages of the program through their national association representatives of the GNCFC and NAFPTA, but the approach had some limitations due to weaknesses of the capacity of these national associations.** The role of fisheries associations in the roll out of interventions in the sector improved program delivery. Targeting of beneficiaries for any economic safety net program often raises the question of eligibility-those whom the intervention is designed to reach- as well as inclusion and exclusion – those whom a program does or does not reach. Targeting in the implementation of Economic Safety Net Schemes is primarily concerned with questions of how the eligible are identified and reached in practice, and mechanisms for self-targeting, community-based selection, and means-testing. The GNCFC and NAFPTA were engaged to design their own selection criteria for vulnerable households (based on assessment of health, education, and standard of living). They were also engaged in the extensive awareness creation and education activities following development of the selection criteria. This helped to reduce misunderstanding and tension related to why some households were selected and others were not. GNCFC and NAFPTA then used the criteria to nominate households defined as poor and vulnerable to potentially receive the cash benefit, but they were not able to provide the total number of households expected. Enhancing the coordination role of fisheries associations for the selection of potential beneficiary households with support from SFMP Implementing Partners became extremely important when it was realized that the local representatives of GNCFC and NAFPTA did not have the capacity to move around to engage potential beneficiaries and capture their data required for the process. While the involvement of the SFMP Implementing Partners was important, it is equally important that the fisheries associations have the ability and capacity to coordinate their activities at the local level.

**Failure to juxtapose the schedule of Economic Safety Net Scheme implementation with other important national programs can lead to implementation challenges.** The lack of a full national household register of poor and vulnerable households disaggregated into occupational categories also makes targeting of beneficiary households more difficult and time consuming. The processes of requesting potential beneficiaries to provide their photo identification which included voter's ID was misconstrued by some parties. In some communities some potential beneficiaries refused to take part in the identification and nomination process because they thought one of the political parties (an opposition party) was collating their details so that their data could be deleted from the national voter's register. This phenomenon played a part in the shortfall in the list of potential beneficiaries planned for some communities across the entire coastal region of Ghana, as the implementation of the Economic Safety Net Scheme coincided with the 2020 parliamentary and presidential elections in Ghana.

**In the absence of COVID-19, sufficient in-person engagement is required especially during the initial data collection and administration of a Proxy Means Test (PMT).** This will allow staff of administrators of the Economic Safety Net Scheme or their representatives to have firsthand information about the potential beneficiaries. Proxy means testing is

necessary to ensure truly poor vulnerable households are benefiting. The PPI surveys showed that many of the nominated beneficiaries had low probabilities of being poor using this tool. This suggests that phone polling may not be a good approach for conducting a proxy means test. This was the pilot design and took into consideration the need to limit face to face meetings and travel in a COVID-19 environment, as well as conduct the beneficiary selection process in a very short time period of only a few months. Ideally, this process needs more time and a face-to-face meeting with the nominated households, similar to what the LEAP program does. Using a more detailed means test would provide better assurance that the program indeed was reaching the intended fisheries dependent vulnerable households living at or below the international poverty line or in extreme poverty.

**Setting up an Ad hoc Technical Committee was instrumental in leveraging expertise and support from all key government institutions and the Ministry of Gender, Children and Social Protection, the ministry responsible for coordinating all social protection interventions in Ghana.** This is important because any future social protection intervention could benefit from the National Household Registry currently being compiled by the MOGCSP. It also made other government agencies more acutely aware of the economic vulnerabilities specific to households in Ghana's artisanal fisheries sector. For the purposes of monitoring, informing the local government agency with administrative oversight of the respective communities is necessary. In this instance, the coastal District Assemblies were informed and kept abreast of developments.

**Provision of sufficient time for each of the distinct phases and chain of actions involving development of criteria through verification of potential beneficiaries, final payment, and follow-up monitoring is critical for effective implementation.** At least a year is required for effective engagement with beneficiaries when a target of 2000 or more beneficiaries are required. This is because the poor and vulnerable are usually the segment of the population that is most difficult to access and excluded from most social and economic activities.

**The incomes produced practicing non-fishing livelihoods piloted by SFMP in its' COVID response component seem to depend to a large extent on trainees' individual entrepreneurial spirit, their networks, and their ability to find customers.** SFMP prioritized livelihoods that could be initiated after short trainings and with relatively low startup costs given the short intervention period provided for the COVID response. Some participants had been doing good business, but most were making less weekly than the average fisher's income (GHS 109/US\$ 19).

**Trainees indicated interest and choice of livelihood options that were strongly gendered.** These differences stemmed from the perception that some livelihood options are typically 'male oriented' and others 'female oriented,' influencing more women to sign up for options like the handwashing soap making and baker's confectionery, and more men to sign up for satellite installation and air conditioning repair. Overall, SFMP provided fewer 'male-oriented' options during the livelihoods pilot. While the strategy was to target mainly women and youth it was likely in part due to the overrepresentation of women in the initial stakeholder outreach, leading the SFMP team to select livelihoods options more favored by women than men. These limitations could not be altered within the short time frame of the COVID-19 intervention but must be tackled if they are to be part of a longer-term assistance to fishing communities. In particular, if fishing fleets are eventually reduced, this will limit the number of males that can go fishing, necessitating the livelihoods programs to more equally benefit both men and women and youth involved in the sector.

**Scoping conversations with private companies like SkyFox Ltd, an integrated aquaculture and irrigation company, and ZaaCoal, producer of coconut husk charcoal, indicated that partnerships with the private sector might result in the development of livelihood models that could provide reasonable incomes.** However, implementing these models would have required a minimum of 6-12 months before seeing results, and would have required continued facilitation from an implementing partner during that period. Based on this, SFMP found these models to be unsuitable for trial during the short duration of the COVID-19 extension, though they may merit further exploration through future fisheries programming with a longer time horizon.

## **RECOMMENDATIONS AND WAY FORWARD**

### **Strengthened Enabling Environment for Marine Resources Governance**

**Support development of a New National Marine Fisheries Management Plan.** The National Marine Fisheries Management Plan (NMFMP) adopted in 2015 expired in 2019. This initial plan was part of corrective actions required for the European Union to remove a “yellow card” imposed on Ghana and as a result, was prepared largely without full stakeholder participation. The preparation of the new NMFMP, 2021-2025, has adopted a more consultative approach to ensure inputs and concerns of stakeholders are well integrated to facilitate effective implementation process. The EU has imposed another yellow card warning to Ghana in 2021, so the new plan should address issues raised in their warning. The new USAID Ghana Fisheries Recovery Activity can assist MOFAD and the Commission in this process.

**Promote implementation of the Co-Management Policy.** The project was able to support the Ministry and the Fisheries Commission to secure approval for the Co-Management Policy which can in the last few months of the project life. A key recommendation provided from regional stakeholder engagements on the co-management policy conducted in the last project year included the need for the Fisheries Commission to develop an operation plan and make necessary budgetary allocations to be able to operationalize the policy and monitor progress on key deliverables including setting up a Science and Technical Committee and a Small Pelagics Management Committee. The Commission should also take steps to replicate the co-management model of the Densu, Pra and the Ankobra estuaries in other small-scale ecosystems and communities in Ghana.

**Develop New Fisheries Legislation.** The National Cabinet has approved the drafting instructions submitted by MOFAD and prepared with SFMP assistance. The development of a new Fisheries legislation to address existing gaps and weaknesses in Ghana’s fisheries laws, therefore, remains one of the key issues to be addressed and should be taken up by government and supported by any new donor support for the fisheries sector.

### **Science and Research Applied to Policy and Management**

**Set up a functional Science and Technical Committee.** In the near term, the Fisheries Commission should proceed to constitute the Science and Technical Committee (STC), following approval of the Co-Management Policy with the mandate for the Commission to form the STC. The STC should be tasked with the responsibility of developing standard procedures and processes to foster more collaboration between the Fisheries Commission and universities and engage students of relevant disciplines more effectively in action learning research. There should be active involvement of fishers in research and data collection, as well as other scientific research, to help increase buy-in and voluntary compliance with adaptive management measures based on research outputs.

**Expand the scope of scientific research to incorporate socioeconomic issues.** As the Fisheries Commission and the Ministry of Fisheries and Aquaculture Development seek to transition the fisheries sector from the current situation to a state of sustainable management of the resources, there will be the need to advance research on socioeconomic issues to generate relevant outputs to feed into both management decision making and policy formulation in pursuit of establishing strategic balance between ecological well-being and human well-being.

**Pursue the continuous upgrade and innovation in ICT for fisheries management.** Given the important role that ICT can play in various aspects of fisheries management, the Fisheries Commission should continue to explore new technologies for fisheries information systems and promote innovation.

## **Creating Constituencies and Stakeholder Engagement**

**Establish a communications unit in the Fisheries Commission.** Given the importance of communications in creating constituencies and building social capital towards effective stakeholder engagement in decision making, the FC needs to establish a Communications Unit and develop a comprehensive communication strategy covering the key issues within the sector.

**Institutionalize the Fisher-to-Fisher (F2F) dialogue process.** The F2F has proved to be an important platform for fishers to engage each other and the Fisheries Commission on their concerns and seek redress directly from top management of the Commission. The approved Co-Management Policy for the Fisheries Sector provides a roadmap for establishing committee structures where the major fisherfolk associations can participate more actively in fisheries management. Such committees need representation of all the major national associations including the Ghana National Canoe Fishers Council (GNFCF), the National Fish Processors and Traders Association (NAFPTA), the Ghana Industrial Trawlers Association (GITA), the Ghana Inshore Fishers Association (GIFA), and the National Fisheries Association of Ghana (NAFAG).

**Provide workshops for political party representatives.** Political interference involving the hierarchy of political parties have been identified as one of the major factors limiting enforcement of fisheries regulations and compliance of fishers with regulations. Hence, the FC should initiate a program that provides comprehensive orientation for political parties on the implications of their actions on the sector. It is important to limit excessive interference of politics in fisheries management, especially for a fishery that is at the point of collapse and where recovery measures are already very technical and complicated enough without the ramifications of political interference. While all final decisions are inherently political, the aim should be to allow more room for science-based decisions and allow law enforcement to do their jobs unimpeded.

## **Applied Management**

**Sustain momentum on effective implementation of regulatory measures contained in the National Marine Fisheries Management Plan that balance fishing capacity and effort to achieve maximum sustainable harvesting levels.** It is vital for Ghana to sustain the momentum created through the successes attained during the SFMP and WARFP projects. Progress through closed seasons and canoe registration are not sufficient measures by themselves to rebuild stocks. As the National Fisheries Management Plan 2015-2019 is being reviewed to ascertain targets achieved and lessons learned to inform the development of a new National Fisheries Management Plan 2021-2025, it is important that the entire process is informed by science-based information for setting realistic objectives and targets, and in the implementation phase, including monitoring and evaluation of expected outcomes. There must be greater commitment to the implementation of measures in the new NMFMP (2021-2025) in addition to creating a plan.

Supporting Fisheries Commission capacity to implement effort control measures, including an annual closed season for all fleets including the artisanal fishery, evolving managed access based on the SFMP-initiated Canoe Identification Card scheme, an enforced moratorium on new entrants into the commercial and artisanal fleets, and removing or re-aligning subsidies should be top priorities for future projects in the sector. Sustaining and institutionalizing the 2019 achievement of a closed season for the artisanal sector is urgent and challenging. The lessons learned about stakeholder engagement and organizational capacity remain in the forefront to enable continued progress in this area, particularly regarding effort control and



input subsidies. The Government should ensure that budgets are allocated to implement priority initiatives such as further development of co-management plans at all scales and capacity development of co-management institutions and national membership associations that will participate in them.

**Replicate the co-management model of the Densu** where applicable, in other ecosystems and communities, especially in estuaries where women dominate the harvesting of invertebrate species.

### **Post-Harvest Improvements**

**Promote adoption of improved fish smoking technology – the *Ahotor* oven.** To reach a critical mass of early adopters that catalyze widespread adoption of the *Ahotor* oven, continued subsidies may be required until several thousand beneficiaries have adopted the technology. At the same time, more time and resources are needed to strengthen the enabling conditions for access to finance, quality production and proper use of the technology, and consumer awareness on product quality and health benefits. Quality production and proper use of the *Ahotor* technology requires further development of training modules and qualified trainers. Future programming should support training of Fisheries Commission zonal officers to carry out construction monitoring and quality control to support this. In addition, the *Ahotor* network and knowledge-sharing platform established by artisans, processor associations, and NGOs (NAFPTA, DAA, and CEWEFIA) represents an opportunity to develop and institutionalize an incentive system to identify and recognize high-quality local artisans, increase competition between producers, and bring down *Ahotor* construction costs. Additional demand from the aquaculture sector could also play a part in driving competition and adoption.

**Provide more access to credit and finance for women processors and traders.** Enabling conditions for access to credit will require building relationships and trust between financial institutions, processor associations, and the processors themselves. Part of this approach includes more effort to increase overall literacy and financial literacy among processors. Continuing the development of VSLAs to build financial capacity may help in some regions when combined with additional business development training for processors. For formal financial institutions, development of reliable mechanisms to track processors moving from site to site and other aspects of risk mitigation and transaction cost reduction would also help facilitate future credit for installation of the *Ahotor*.

**Scale up the Class 1 kitchen certification scheme.** This represents a realistic opportunity to promote the trade and consumption of quality fish in Ghana and for export. MoFAD should collaborate with the agencies represented on the Certification committee, especially the FDA, to migrate the Class 1 recognition scheme on to the newly launched Progressive Licensing Scheme for cottage industries and small-scale food processors. This will allow Class 1 certified products to be sold in grocery stores and other high-value formal sector markets and may incentivize wider adoption of the *Ahotor* oven.

**Promote consumer awareness.** Complementing the approach of developing more quality fish products, consumer awareness of health and quality issues surrounding traditionally processed fish should be strengthened with the intent of promoting demand for higher quality fish produced in line with Class 1 Certification requirements. Participatory research should be used to understand potential willingness to pay price premiums for quality products and to build a clearer business case for using the *Ahotor* oven among fish processors by highlighting cost and labor savings and potential access to high-value markets. The information should be shared broadly by processors themselves through their networks and supporting institutions to drive

behavior change by consumers and on adoption of improved fish smoking technologies, hygiene and handling practices.

**Build capacity of processor and trader associations to train their members in improved post-harvest practices.** Fish trade associations and groups will play a key role in training additional fish processors on food safety, *Ahotor* oven use, and Class 1 Certification requirements. Further capacity building initiatives and improved access to finance for these organizations, as already outlined in the draft National Marine Fisheries Management Plan 2021-2025, will cement their ability to support fish processors as they adopt more hygienic and safer processing methods.

### **Gender Mainstreaming**

**Improve the financial literacy of fish processors and traders** to increase savings rates and access credit, as well as the use of digital financial tools in their businesses. As literacy and numeracy improve, provide savings and credit services for women processors, continue improving business management skills, and introduce digital financial tools.

**Broaden the participation of women in fisheries management** by ensuring that non-members and non-active processing association members have opportunities to develop the skills and motivation they need to engage in fisheries management. This will require not only strengthening leadership, organizational, and technical skills, but providing literacy and numeracy training.

**Increase the involvement of traditional fisheries leadership structures**, including the chief fishmonger/processor (*Konkohema*). These leaders may have an untapped potential to lead, manage, and mobilize their communities.

**Take a “men as partners” approach** to increase men’s support and reduce the additional burdens that may come about as women engage more in the fisheries sector.

**Improve relations between women’s groups and the Ministry, Fisheries Commission, the Ghana Industrial Trawlers Association (GITA), the Ghana Inshore Fishers Association (GIFA) and the Ghana National Canoe Fishers Council (GNCFC)** to ensure stronger cohesion, inclusion, and dialogue between policy makers, producers, and processors for better management of the fisheries sector.

**Identify and work with local champions and associations** to reduce reliance on donor and project-based funding. Continue to strengthen the organizational capacity of key women’s organizations such as NAFPTA who represent a broad constituency at the national and local levels.

### **Capacity Development**

**Strengthen the functional and institutional structures of fisheries sector associations.** Given the limited number of MOFAD/FC staff, the sector will benefit from enhanced functional and coordination capacity of the various fisheries associations to engage their membership. MOFAD/FC can leverage effective internal coordination within these associations towards effective policy dissemination and implementation. National membership associations should be a priority focus of intensive and comprehensive capacity development support in the coming years to improve functional and coordinating capacities of all key fisheries sector associations including the Ghana Industrial Trawlers Association (GITA), the Ghana Inshore Fishers Association (GIFA) and the GNCFC and the NAFPTA. The full potential of national membership associations to lead transformational change to achieve sustainable management of Ghana’s small pelagic fisheries at scale remains unrealized due to significant gaps in organizational capacity characteristics of this group of organizations.

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Internal governance and leadership issues were and remain of paramount importance since strong national associations that inclusively represent resource users and value chain actors are required to help formulate and implement sector mechanisms that are laid out. The success of effectively implementing a new National Fisheries Act, the national fisheries co-management policy, annual closed seasons, gender mainstreaming, anti-child labor and trafficking initiatives, Ahotor oven promotion, and the Class 1 Hygienic Processing Certification strategies, depends on representative participation of all stakeholders, especially small-scale fishers and processors, who previously were not empowered to participate effectively.

**Implement the governance and management reforms documented in national membership associations revised constitutions, board charters and standard operating procedures.** This is an urgent priority as the confidence of their membership is weak. The confidence of other partner institutions in the sector and potential donors also is at stake.

**Apply regular organizational capacity assessment processes and continue to implement organizational capacity development action plans as an integral part of the operations of Government, academia and CSOs engaged in the fisheries sector.** A key resource for these processes is the [SFMP Organizational Capacity Development Manual](#). Communities of practice among institutions and organizations regarding organizational capacity development should be encouraged. Local NGOs, regional associations, UCC Centre for Coastal Management and the LUSPA Central Region Training Center should implement and analyze the results from implementation of their business plans and sustainable financing mechanisms developed with SFMP support. This may require additional support to anchor these organizations in terms of focusing on the plans and actions they developed.

### **The COVID Response**

**Continue education of fisherfolks on the coronavirus disease.** The COVID -19 suite of educational materials developed by the SFMP can be applied for future engagements. As vaccines are becoming available in Ghana, new materials could be developed and disseminated on the benefits of getting vaccinated and to counter possible vaccine hesitancy among fisherfolk. Future interventions should consider adopting the “Telegram” messaging app. As it has features of Telegram which make it user friendly as compared to WhatsApp. The landing sites competition can be adopted by the Fisheries Commission and scaled up to foster community participation. For example, a competition on beach cleanliness or good/sustainable fishing practices can be instituted. Frequent handwashing remains critical in the prevention of most diseases that are endemic in fishing communities even before the onset of COVID-19 and support to the landing site advocates to provide supplies of soap and water should be considered. Local leaders of the fisheries associations – Chief fishermen and the ‘*Kokonhemaas*’ could assume the responsibility for management of the handwashing stations, ensure the constant supply of consumables, and remunerate the site advocate to ensure that the stations remain functional over time and community members always have a safe place to wash their hands. Pre-mix development funds at the community level should be considered as a means of sustainable financing.

The Fisheries Commission and fisheries associations should assume the administration of the social media platforms to continue disseminating IEC materials. Volunteers at the district or community level of the associations and the zonal officers of the FC could be trained to moderate groups they belong to. The platforms can also serve as public channels where resource users and policymakers nation-wide such as the Fisheries Commission, chief fishermen, landing beach committees, or co-management groups can share and document best practices and success stories relating to the fight against IUU fishing and similar sustainable fisheries management practices.

**Promote the incorporation of the SFMP COVID response social safety net pilot as part of the LEAP program.** LEAP and the FC can coordinate with fisherfolk associations on developing a registry of fisheries dependent vulnerable households under the auspices of the National Household Register program. While the main intent would be to compensate poor vulnerable households during closed fishing seasons, consider cash transfer benefits to compensate households impacted by floods and tidal waves with the active involvement of the National Disaster Management Organization (NADMO).

**Investigate further the possible impact of cash transfer benefits on reducing incidences of fishing households trafficking their children.** The cash transfer benefit clearly helps put food on the table for children as well as help keep them in school. The main purpose of the cash benefit was to maintain a minimum food basket for the family. The fact that 88% of respondents said the funds were used to buy food suggests this goal has been met to some degree. However, it is clear that the cash benefit serves other purposes as well, providing benefits to help keep children in school or to support household livelihoods were high on the list of uses of the funds. Other surveys have found that a main reason fishing households traffic their children is the lack of funds to support their children.

**Consider conditional economic safety net assistance.** This would include evidence that children have been to a health clinic, or vaccinated, children are enrolled in school, or a member of the household is enrolled in a vocational training program during the period when cash benefits are provided, or compliance with fisheries regulations, including not engaging in IUU fishing activities. A one-month closed fishing season provides enough savings in pre-mix subsidies to allocate \$52 to 67,000 fisheries dependent households (300,000 fisherfolk) across the four coastal regions in Ghana for that month.”

**Provide a registered SIM and phone to beneficiaries, along with basic training on use of mobile money and mobile wallets.** Where possible encourage beneficiaries to join a local Village Savings and Loan Association (VSLA) or set up a savings account with a bank.

**Use mobile money platforms for cash disbursement to poor and vulnerable fishing households.** Most fisherfolk are unbanked and underserved due to the nature of their businesses, location and literacy status. The mobile money platform is well suited for them as it enables them to access a suite of services relevant to their lives, encouraging them to keep their money in digital form and building resilience to financial shocks. This requires the involvement of digital financial service providers in the project design to educate the target beneficiaries on digital financial literacy as well as facilitate the design of user friendly products to suit the needs of fishers.

**Use the National Household Poverty Registry for the purposes of proxy means testing of intended beneficiaries.** In October 2015, the Government of Ghana launched the Ghana National Household Register to streamline and make more efficient the targeting system in Ghana by using the same Proxy Mean Test indicators (Common Targeting Mechanism) in the identification of potential beneficiaries for social protection interventions. This is part of GoG’s efforts to sustain and deepen the progress made in poverty reduction by ensuring that a larger share of benefits of social protection interventions goes to the extremely poor and vulnerable. The register is however yet to cover the four coastal regions. When completed, the register should have a detailed breakdown of all poor households by occupation to make targeting and identification of beneficiaries less difficult and time consuming. As detailed in the Implementation Challenges section, lack of information is a critical gap in understanding and addressing poverty in fishing communities.

**Support gendered livelihood interventions for fishing households.** Developing diversified livelihood strategies for fishing households needs to carefully consider gender biases and constraints. While many donors and Ministries focus on youth and women in developing employment opportunities and access to credit due to being historically disadvantaged and underserved, the fisheries context provides a unique case where men may no longer be able to earn an adequate living from fishing. Understanding the unique challenges, barriers and constraints that both men and women face is essential for crafting a gender equitable livelihood strategy targeting fisheries dependent households. Future livelihoods programming should strengthen efforts to engage men. This will help ensure program design includes more balanced support for livelihoods that meet the preferences and needs of men and women.

**Selecting livelihood options,** SFMP prioritized livelihoods that would generate income in the shortest possible time and on a regular basis to mirror the payment structure that is the norm in fisheries. However, more than 50% of respondents to the monitoring survey noted that these livelihoods were not able to meet their everyday needs. While entrepreneurial livelihoods such as those tested in this pilot will have a role to play, large scale livelihoods programs should also include more stable and less risky livelihood options and those that produce greater earnings. To encourage pursuit and adoption of livelihoods beyond those tested in this pilot, future livelihood interventions should include behavior change communication activities to promote interest in livelihoods options that require longer term training than what could be provided during this pilot.

**Develop private partnerships.** Partnerships with private enterprises, master tradesmen, and existing technical and vocational education and training opportunities should be cultivated. These trainings are likely to yield stronger results than the short trainings that could be offered under the SFMP pilot. This approach would take advantage of existing workforce development resources, could more easily scale and has potential to continue without donor support, particularly if training is meeting the needs of private sector employers.

**Improve access to finance through savings.** A good savings and investment culture is needed to capitalize business start-ups, especially given the high interest rate regime in Ghana. Future livelihood interventions should focus on nurturing the business and financial management skills of startup entrepreneurs and linking them with financial institutions for further support.

**Broaden stakeholder engagement in livelihood initiatives.** The process established for this pilot intervention can be expanded with adequate resources to achieve results on a larger scale. An ecosystem of both private and public stakeholders with adequate funding and technical expertise will be required to fully engage youth and offer them opportunities for a future away from fishing. These might include Mastercard Foundation, Tony Elumelu Foundation, African Development Bank (AfDB) and Alliance for Green Revolution in Africa (AGRA). These and many other organizations drive entrepreneurial ecosystem focusing on the youth

**Support interagency coordination.** The examples and lessons from these piloted livelihood interventions for fisherfolk provides the Government of Ghana with evidence on approaches for effective livelihood assistance to fishing communities affected by COVID-19. However, the mandate of the Fisheries Commission and the MOFAD is the management of Ghana's aquatic and marine fish resources. In order for MOFAD and the Fisheries Commission to be successful in rebuilding the vitality of the fishing sector, interagency coordination is needed with Ministries that have mandates to promote and support job creation, vocational training and youth employment need to be forged with targeted interventions in coastal communities addressing the special needs of fisheries dependent households.

## FINANCIAL SUMMARY

USAID/Ghana Sustainable Fisheries Management Project

University of Rhode Island Coastal Resources Center

Award Number: AID-641-A-15-00001

USAID/Ghana Total Estimated Amount: \$25,987,826

Award Period of Performance: October 22, 2014 to April 30, 2021

Budget Item	Total funds Obligated Life of Project	Estimated Total Funds Expended through April 30, 2021 (US\$)	Estimated Balance of Obligated Funds, Remaining as of April 30, 2021 (US\$)	Cost Share (URI and Third Party)
Direct costs - SFMP	12,427,010	12,486,126	(59,116)	1,137,043
Subgrantees	9,623,283	9,727,587	(104,304)	3,536,672
Construction	387,000	307,113	79,887	
Training	349,655	208,703	140,952	124,850
<i>Total Direct</i>	22,786,948	22,729,529	57,419	4,798,565
Indirect	3,200,878	3,258,297	(57,419)	
<b>Total</b>	<b>25,987,826</b>	<b>25,987,826</b>	<b>0.00</b>	<b>9,597,130</b>

## ANNEX A: PERFORMANCE INDICATOR TRACKING TABLE

The summary Table below includes all standard USAID indicators as well as SFMP custom “Project indicators”. It measures planned versus achieved for each year and gives the cumulative Life-of-Project performance.

Table 21: SFMP annual and life-of-project results for all indicators.

Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking					
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP			
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target			
<b>Project Goal: Rebuild targeted fish stocks via adoption of sustainable practices and exploitation levels</b>																												
Number of hectares in areas of biological significance and/or natural resource showing improved biophysical conditions as a result of USG assistance (EG.10.2-1)	Baseline established	Baselines established (small pelagics)	N/A	N/A	20 hectares	0	0%	10 hectares	11	100%	Tracked	N/A	N/A	610,900 Small pelagics	610,900 ha	100%	Tracked	N/A	N/A	N/A	N/A	N/A	N/A	N/A	610,930	0	0%	
1.a Biomass to produce MSY (B <sub>msy</sub> ) (Project indicator)	Baseline established	N/A	N/A	N/A	N/A	N/A	N/A	Stable or increasing	declining	0%	Stable or increasing	declining	0%	Stable or increasing	Declining	0%	Stable or increasing	declining	0%	Stable or increasing	declining	0%	Stable or increasing	declining	0%	Stable or increasing	declining	0%
1.b Fishing Mortality at MSY (F <sub>msy</sub> ) (Project indicator)	Baseline established	N/A	N/A	N/A	N/A	N/A	N/A	Stable or decreasing	increasing	0%	Stable or decreasing	increasing	0%	Stable or decreasing	Stable	100%	Stable or decreasing	Increasing	0%	Stable or decreasing	Increasing	0%	Stable or decreasing	Increasing	0%	Stable or decreasing	Increasing	0%
Number of indirect project Beneficiaries (Project indicator)	2015 = 0	N/A	N/A	N/A	N/A	N/A	N/A	130,000	0	0%	130,000	905	1%	135,401	137,518	102%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	130,000 (23% women)	138,423 (22% women)	106%	
<b>IR 1: POLICY: Strengthened enabling policy and legislative environment for improved marine resources governance</b>																												
Number of agricultural and nutritional enabling environment policies completing the following processes/steps of development as a result of USG assistance in each case (EG.10.2-5) (Project indicator 1):		Fish act analysis – step 1	step 1	N/A	Step 2	Step 2	N/A	Step 2	Step 2	N/A	Step 3	Step 1	N/A	Step 3	Step 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dropped in FY 20 N/A	N/A	N/A	
		CLaT strategy – step 1	Step 1	N/A	Step 2	Step 3	N/A	step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	100%

Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking		
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target			
1. Analysis 2. Stakeholder consultation 3. Drafting or revision 4. Approval (legislative or regulatory) 5. Full and effective implementation		Demersal fisheries mgt plan step 1	Step 1	N/A	Step 2	Step 1	N/A	Step 3	Step 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dropped in FY 18 N/A	N/A	N/A
		Co-Management Policy-Step 1	Step 1	N/A	Step 2	Step 2	N/A	Step 3	Step 3	N/A	Step 4	Step 3	N/A	Step 4	Step 3	N/A	Step 4	In progress	N/A	Step 4	Step 4	100%	Co-Management Policy – Step 4	Co-Management Policy – Step 4	100%
		NMFMP-N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	N/A	N/A	N/A	NMFMP-Step 4	NMFMP-Step 4	100%
		Pra (CBMP) N/A	N/A	N/A	N/A	N/A	N/A	Step 3	Step 3	N/A	Step 4	Step 3	N/A	Step 4	Step 3	N/A	Step 4	In progress	N/A	Step 4	Step 4	100%	Pra (CBMP) - Step 4	Pra (CBMP) Step 4	100%
		Ankobra (CBMP) N/A	N/A	N/A	N/A	N/A	N/A	Step 3	Step 3	N/A	Step 4	Step 3	N/A	Step 4	Step 3	N/A	Step 4	In progress	N/A	Step 4	Step 4	100%	Ankobra (CBMP) - Step 4	Ankobra (CBMP) Step 4	100%
		Densu (Oyster Plan) N/A	N/A	N/A	N/A	N/A	N/A	Step 3	Step 3	N/A	Step 4	Step 3	N/A	Step 4	Step 3	N/A	Step 4	In progress	N/A	Step 4	Step 4	100%	Densu (Oyster Plan) Step 4	Densu (Oyster Plan) Step 4	100%
		Gender Strategy -N/A	N/A	N/A	N/A	N/A	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	Step 4	Step 4	N/A	N/A	N/A	N/A	Gender Strategy - Step 4	Gender Strategy - Step 4	100%
<b>IR 2: SCIENCE AND RESEARCH: Increased use of science and applied research to inform decision-making</b>																									
See Crosscutting Indicators																									
<b>IR 3: CONSTITUENCIES: Constituencies and political will for policy reform &amp; implementation built</b>																									
Number of information products disseminated in local media reports, radio shows, conference papers, and research studies (Project indicator 2).	0	20	18	90%	18	21	117%	36	104	289%	63	66	105%	6	18	300%	2	2	100%	N/A	N/A	N/A	157 WP/143 AR	229	146%
<b>IR 4: APPLIED MANAGEMENT: Improved management of marine resources to conserve bio- diversity &amp; provide other benefits</b>																									
Number of hectares under improved management practices of	2015 = 0	0	0	0	N/A	N/A	N/A	619,473	619,496	100%	3205	3215	100%	0	3	N/A	611,000	1792	0%	611,000	611,000	100%	628,319 (FY 19)	622,714 marine &	99%



Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking		
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target			
technologies with USG assistance (EG.3.2-25)																							WP)/ 622,678 (FY 19 AR)	estuarine hectares	
Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance (EG,10.2-2)	2015 = 0	0	0	0	N/A	N/A	N/A	619,473	619,496	100%	3205	3215	100%	0	3	N/A	611,000	1792	0%	611,000	611,000	100%	628,319 (FY 19 WP)/ 622,678 (FY 19 AR)	622,714 marine & estuarine hectares	99%
Number of DAs supported with USG Assistance (Ghana CDCS, IR 2.3 indicator)	2015 = 0	4	4	100%	4	4	100%	4	5	125%	5	6	120%	6	6	100%	N/A	N/A	N/A	N/A	N/A	N/A	5	6	120%
Improvement in fisheries enforcement and prosecutorial chain to counter IUU fishing (increase/decrease in prosecutions and percent that lead to conviction) (Project Indicator)	Baseline established	N/A	N/A	N/A	Increasing	No data	N/A	Increasing	No data	N/A	Increasing	No data	N/A	Increasing	Data in peer article	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Increasing	secondary data evidence for commercial sector available but artisanal sector – unknown	N/A
Number of climate vulnerability assessments conducted as a result of USG Assistance (EG 4.5.1)	2015 = 0	2	1	50%	3	2	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	3	100%
Number of individuals in the agriculture system who have applied improved management practices or technologies with USG assistance (EG.3.2-24) (Note: FY19 and prior reported as E.G. 3.2-17)	0	NA	N/A	N/A	N/A	N/A	N/A	100,000	0	0%	100,000	905	1%	111,000	107,751	97%	10,200	200	2%	10,000	10,134	101%	111,000	108,856	98%
Number of individuals participating in USG-assisted group-based savings, micro-finance or lending programs (EG.4.2-7)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	375 New (Target for the WLI)	401 New (F=357 M=44)	100%	N/A	N/A	N/A	375	401	107%
Number of micro, small and medium enterprises (MSMEs), including farmers, receiving business development services	2015 = 0	560	751	134%	751	985	131%	896	1737	194%	950	980	103%	700	658	94%	951	951	100%	N/A	N/A	N/A	3857	6062	157%

Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking		
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target			
from USG assisted sources (Project indicator 3)																									
Value of agriculture-related financing accessed as a result of USG assistance, (EG.3.2-27) Note: FY17 and FY18 results shown here were under old EG.3.2-6	2015 = 0	N/A	N/A	N/A	process has completed	N/A	N/A	\$30,497	\$56,579	186%	\$37,723	\$1,299	3%	\$18,809	\$25,962	138%	\$10,000	\$9036	90%	N/A	N/A	N/A	\$87029	92,876	106%
Number of members of producer organizations and community-based organizations receiving USG assistance (Project indicator 4)	2015 = 0	164	164	0%	1144	1144	100%	1300	1693	130%	2530	3172	125%	8200	717	9%	10,951	951	8.7%	10,000	10,134	101%	13338	17,975	135%
Number of micro, small, and medium enterprises (MSMEs), including farmers, receiving agricultural-related credit as a result of USG assistance (Project indicator 5)	2015 = 0	N/A	N/A	N/A	N/A	N/A	N/A	400	300	75%	100	9	9%	100	135	135%	0	48	N/A	N/A	N/A	N/A	600	492	82%
Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance (Project indicator 6)	2015 = 0	2 = DAA, CEWEIFIA	2	100%	3 = 2 old, 1 new GNCFC	1	100%	4 = 3 old, 1 new NAFPTA	6	150%	6 = 4 old, 2 new GITA, NAFAG	6	100%	6 on going	6	100%	3 on going	3	100%	0	N/A	N/A	6	6	100%
<b>Cross Cutting Indicators</b>																									
Number of institutions with improved capacity to develop and implement managed access fisheries management plans	2015 = 0	Baselines established	N/A	N/A	N/A	N/A	N/A	15	15 (10 GoG; 5 CSOs)	100%	0	1 (NAFP TA)	N/A	19	17	89%	N/A	N/A	N/A	N/A	N/A	N/A	19	17	89%

Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking		
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target			
Percentage of female participants in USG-assisted programs designed to increase access to productive economic resources (GNDR-2)	0		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	94%	89%	95%	40%	81%	203%	91%	86%	95%
Value of new private sector investments in select value chains (FTF 4.5.2-38 Old)	2015 = 0	Tracked no target	N/A	N/A	Tracked no target	N/A	N/A	Tracked no target	\$51,959.23	N/A	N/A	\$15,496	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Tracked no target	\$67,455.23	N/A
Number of public-private partnerships formed as a result of Feed the Future assistance (FTF 4.5.2(12) Old)	2015 = 0	0	N/A	N/A	1	1	100%	1	1	100%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	2	100%
Number of days of USG funded technical assistance in NRM and/or biodiversity provided to counterparts or stakeholders (EG 4.8.1-28 Old)	2015 = 0	806	816	101%	956	1019	107%	704	593	84%	770	814	106%	262	525	200%	N/A	N/A	N/A	N/A	N/A	N/A	3498	3767	108%
Number of people receiving USG supported training in natural resources management and/or biodiversity conservation, and climate change, disaggregated by gender (EG.10.2-4)	2015 = 0	404	890	220%	826	1,047	127%	1492	1766	118%	3124	2880	92%	1854	3238	175%	375	642	171%	N/A	N/A	N/A	7700	10,463 (57% male, 43% female)	136%
Number of person hours of training in natural resources management and/or biodiversity conservation supported by USG assistance (FTF 4.8.1-29) (old)	2015 = 0	4040	9832	243%	16080	18846	117%	19,959	22997	115%	42328	30280	72%	12354	20,132	163%	N/A	N/A	N/A	N/A	N/A	N/A	94,761	102,087	108%
Number of individuals who have received USG-supported short-term agricultural sector productivity or food security training (EG.3.2-1 Old)	2015 = 0	N/A	N/A	N/A	N/A	N/A	N/A	1,987	3096	156%	4074	3860	95%	2554	3676	144%	N/A	N/A	N/A	N/A	N/A	N/A	8,615	10,632	123%
Number of individuals who have received USG-supported degree-granting agricultural sector productivity or food security training (RAA) EG.3.2-2	2015 = 0	N/A	N/A	N/A	N/A	N/A	N/A	5 Continue	5	100%	5	5	100%	1	2	200%	N/A	N/A	N/A	N/A	N/A	N/A	5	5	100%

Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking			
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP	
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target				
Number of individuals participating in USG food security programs (EG.3.2)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2554	3676	144%	550	1530	278%	2025	2119	105%	6251 (IR4 + Cov 2a, 3b)	7325	117%
Number of service providers that receive training, technical assistance, or capacity building in victim-centered or trauma-informed services (PS.5.1-24)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	670	656	98%	N/A	N/A	N/A	670	656	98%
Number of people trained in prevention (PS.5.3-15)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	290	296	102%	N/A	N/A	N/A	290	296	102%
<b>COVID 1: Strategic Area (Fisher folk at 300 landing sites adhere to COVID-19 prevention protocols)</b>																										
Number of sites (landing beaches, processing centers or fish markets) obtaining hygiene equipment and supplies adhering to COVID-19 prevention protocols (Project indicator 7a)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	140	125	89%	240	153	63%	240 (based on 80% of 300) 194 (based on 80% of 242 total served)	153	63% (79%)
Number of sites showing improvement in adherence to social distancing and other good practices (Project indicator 7b)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	300	148	49%	300 242	148	49% (61%)
Number of functional Social Media Groups (Project indicator 7c)	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12 groups/450 persons	0	0	24 groups/900 persons	21 groups/700 persons	88% groups 78% persons	24 groups/901 persons	21 groups/700 persons	88% groups 78% persons
<b>COVID 2: Strategic Area (Cash transfers for 2000 fisheries-dependent households)</b>																										
US\$ disbursed per household/person (Project indicator 8a)	2020= 0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Avg. \$51 / hh/month. Avg \$208 / hh over 4 months. Total	\$396,240 to 1905 hh over 4 months = \$208 each x 1905	97%	Avg. \$51 per hh per month. Avg \$208 per hh over 4 months. Total of \$416,000 to	\$396,240 to 1905 hh over 4 months	97%

Indicator	Baseline	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			YEAR 6			Year 7			LOP Tracking		
		FY 2015			FY 2016			FY 2017			FY 2018			FY 2019			FY 2020			FY 2021			Revised LOP Target	Cumulative Actual Results	% Actual vs. revised LOP
		Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target	Target	Actual	% Actual vs. Target			
																				\$416,000 to 2000 hh over 4 months			2000 households over 4 months		
% of targeted households with steady or decreasing hunger and steady or increasing diet.(Project indicator 8b)	2020 = 0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	90%	100%	111%	90%	100%	111%
Number of methodologies for targeting and monitoring of economic assistance validated (Project indicator 8c)	2020 = 0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	2	100%	2	2	100%
<b>COVID 3 Strategic Area (Sustainable and Diversified Livelihoods)</b>																									
Number of livelihood approaches tested and their effectiveness (Project indicator 9)	2020 = 0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	5	250%	2	5	250%

## Explanation of Indicators

**GOAL - Rebuild targeted fish stocks via adoption of sustainable practices and exploitation levels**

**Number of hectares in areas of biological significance and/or natural resource showing improved biophysical conditions as a result of USG assistance (EG 10.2-1):**

***Biomass to produce MSY ( $B_{msy}$ ) and Fishing Mortality at MSY ( $F_{msy}$ ) (Year 5 target)***

Indicators 1a and 1b are project indicators under indicator 1 that are specific to the small pelagic fishery and the much larger LoP target. We are tracking the indicator over time. Estimates of total biomass of pelagic species ([STWG, 2020](#)) based on 2019 data showed a sharp decline following the CPUE trends. The 2019 biomass estimates were the lowest recorded during this time series, well below the  $B_{msy}$  level. The biomass continued its decline as a result of effort increase. The biomass in 2019 was only at 54% of  $B_{msy}$  needed to maintain a long-term sustainable exploitation of the stocks. The stock is considered severely overfished and overfishing continue to occur, making this stock in a state of collapse. According to the 2019 landings figures of *Sardinella aurita*, representing less than 10% of the highest recorded landings, this stock is also considered collapsed. Although stable based on 2018 data reported in 2019, Fishing mortality continued to increase based on 2019 data reported in 2020 as fishing effort increased and stock biomass declined. The current (based on 2019 data) level of fishing mortality, estimated at  $F=0.81$ , is well above  $F_{msy}=0.4$  (the exploitation level at which the stock should maintain a sustainable biomass). Fishing mortality has gradually increased in the past 29 years reaching high and unsustainable levels since 2001 in 2019. The current state of the small pelagic stocks is severely overfished. The stock of *Sardinella aurita* is considered collapsed due its low landings recorded in 2019. The current level of effort and catches are not sustainable. Effort will have to be reduced to avoid future depletion of the stock. The CECAF's working Group and the STWG recommended that small pelagic fisheries of Ghana should be closed to avoid a total collapse of the stock in 2017 and 2018 (CECAF, 2017). It was predicted by previous STWG's stock assessments that without serious interventions to end overfishing and avoid the further deterioration of the *Sardinella aurita* stocks, this stock was expected to collapse by 2020 and already has collapsed in 2019. Insufficient management measures are in place to significantly reduce fishing mortality. Until fishing mortality is reduced, biomass is unlikely to increase as biomass decline is caused primarily by overfishing and not environmental variability or climate change.

The strategy to achieve the LOP was through the implementation of a closed season and an additional holiday and capping on new canoes. The first two measures result in lower Fishing mortality, and the third, the cap, prevents it from going up further by means of added canoes. A closed season was implemented for the artisanal fishing sector for the first time in 2019 (May-June). A trawl sector closure was implemented in Aug-Sept 2019 for the third time, following one closure in 2018 and one in 2019 in other months. The artisanal closure was not timed properly to protect spawning stock so was ineffective at changing stock status. The 2020 closed season was postponed by the Ministry for 2021 due to the COVID-19 pandemic. No second fishing holiday was instituted in FY 20 even though F2F dialogues showed fisherfolk support this. The cap on canoe registration did not occur in FY 20 as well since registration cards must be distributed and then a grace period for registration will ensue before registration is capped. There is a significant lag in reduction in fishing mortality and increase in biomass. While the additional measures may be implemented in FY21, the project will end before any likely change in biomass resulting from these actions will be measured. Biomass improvements will lag by a year or two after fishing mortality is reduced. We can however

reasonably assume it will occur as a result of implementation of all these management measure(s), if and when this occurs.

A confounding factor is the “saiko” catch (fish illegally transshipped from trawlers to canoes at sea) which is not reported in official landing statistics. While the trawler association made public promises to eliminate this practice as did several political parties in the run up to the December national election, it continues unabated. Prevention of saiko catch would in all likelihood contribute to improved biomass

### **Number of indirect project beneficiaries (Project indicator)**

A total of 107,518 fishermen (males) based on the 2016 Fisheries Commission Ghana Canoe Frame Survey, and 30,000 fish processors and traders (estimated number of women processors and traders in the marine fishery as stated by FC officials in public meetings), totaling 137,518 persons indirectly benefiting from the implementation of the closed season as a management measure for the marine fishery. Combining the FY 2018 results of Fisherfolk in the Densu, Pra and Ankobra estuaries that implemented closed seasons for the second time in two years, and the number of fish processors that benefited from the new Ahotor fish smoking oven, this cumulatively gives a total of 138,423 (107,902 males and 30,499 females (22 percent)) out of the cumulative target of 130,000 (23 percent female) marine fishers, processors and marketers. This represents 106 percent achievement over LoP. Estimates to establish the target were based on Fisheries Commission estimates in surveys and public statements. These estimates varied over time as official frame surveys (census of boats gear and fishermen) were updated and this accounts to some extent for the minor variation in target versus actual as new estimates of number of fishers and fish processors were used in the cumulative result estimate.

### **IR 1 - POLICY: Strengthened Enabling Environment**

#### **Number of agricultural and nutritional enabling environment policies completing the following processes/steps of development as a result of USG assistance in each case: (EG.10.2-5) (Project indicator 1):**

This indicator is now EG.10.2-5 and not a Standard FtF Indicator as it was prior to 2019.

Cumulatively, a total of seven policies were approved out of the seven targeted over LoP. The Anti-Child Labor and Trafficking (CLaT) Strategy and Gender Strategy were approved in FY17 and the National Marine Fisheries Management Plan in FY18.

Four policies were approved by Cabinet and signed by the Minister in FY21. These included the co-management policy and the three community-based management plans for the Densu, Pra, and Ankobra estuaries. Even before formal approval, the three community-based plans were being fully implemented by legally constituted user group associations and co-management committees and supported by the Fisheries Commission. In this regard, it could be argued that the plans skipped the formal adoption process and were at step 5, full implementation, in Year 4.

SFMP engaged two Ghanaian consultants to support amendment of the National Fisheries Act and carried on consultation retreats with producer associations. A comprehensive Cabinet Memo seeking Cabinet approval for revision of the national fisheries law, culminating in the development of new fisheries legislation was prepared for MOFAD. MOFAD failed to submit to the cabinet for approval before upcoming national elections in December 2020, the window of time where new legislation could be prepared and submitted prior to the then anticipated project end. In 2021, the memo was finally submitted to Cabinet, but is not yet approved.

## **IR2 - SCIENCE & RESEARCH**

See Crosscutting Indicators.

## **IR 3 - CONSTITUENCIES**

### **Number of Information Products Disseminated in local media reports, radio shows, conference papers and research studies (Project indicator 2)**

The LoP target was exceeded by 146 percent. Year 5 represented an intensive communications campaign in support of a closed season declaration and implementation by MOFAD/FC.

## **IR 4 - APPLIED MANAGEMENT**

### **Number of hectares under improved management practices or technologies with USG assistance (EG 3.2-25)**

This LoP target was met in previous years, but a completed canoe registration database and Canoe Identification Cards printed and distributed to Fisheries Commission in Q2 FY21 enhanced the number of practices being utilized to improve the fish stocks. In FY20 the Densu Oyster Pickers Association implemented a third consecutive annual closed season for the oyster fishery from mid-November 2019 to mid-April 2020 in accordance with the Oyster Fishery Co-Management Plan pending signature. As documented on page 7 of the draft plan, the management area covers 1,792 hectares. ([https://www.crc.uri.edu/download/GH2014\\_ACT139\\_DAA\\_FINAL508.pdf](https://www.crc.uri.edu/download/GH2014_ACT139_DAA_FINAL508.pdf)). Both estuarine and marine areas contribute to the LOP target. Cumulatively, a total area of 622,714 hectares representing 99% of the revised LOP target of 628,319 hectares was achieved.

### **Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance. (EG.10.2-2)**

This indicator documents the same number of hectares as EG 3.2-25. In addition to the estuarine areas, the small pelagic hectares are also considered biologically significant areas as Part of the Guinea Current Large Marine Ecosystem.

### **Number of DAs supported**

A total of 6 districts received support on child labor and trafficking issues representing 120 percent achievement of the LOP target of 5.

### **Improvements in Fisheries Enforcement and prosecutorial chain (Custom Project Indicator)**

The secondary data for this indicator was to be collected from government agencies, who were reluctant to provide information due the sensitivity of the data. The unavailable data meant SFMP was unable to make an accurate determination on whether enforcement and prosecutions were increasing or not and its impact on deterring illegal fishing activities. However, a peer reviewed journal article was published in FY19 that showed a significant decrease in trawler incursions into the inshore exclusion zone between 2012 and 2018 that is reserved for the canoe sector fishing. (Mullié, W.C. 2019. Apparent reduction of illegal trawler fishing effort in Ghana's Inshore Exclusive Zone 2012–2018 as revealed by publicly available AIS data. *Marine Policy* Vol.108: 103623 <https://doi.org/10.1016/j.marpol.2019.103623>). This provides evidence that enforcement, at least with respect to the industrial trawling sector, has improved and is resulting in higher compliance

### **Number of Climate Vulnerability Assessments conducted.**

The LOP target of 3 was met in FY16. No additional activities were undertaken on this indicator.



**Number of individuals in the agriculture system who have applied improved management practices or technologies with USG assistance (EG 3.2-24)**

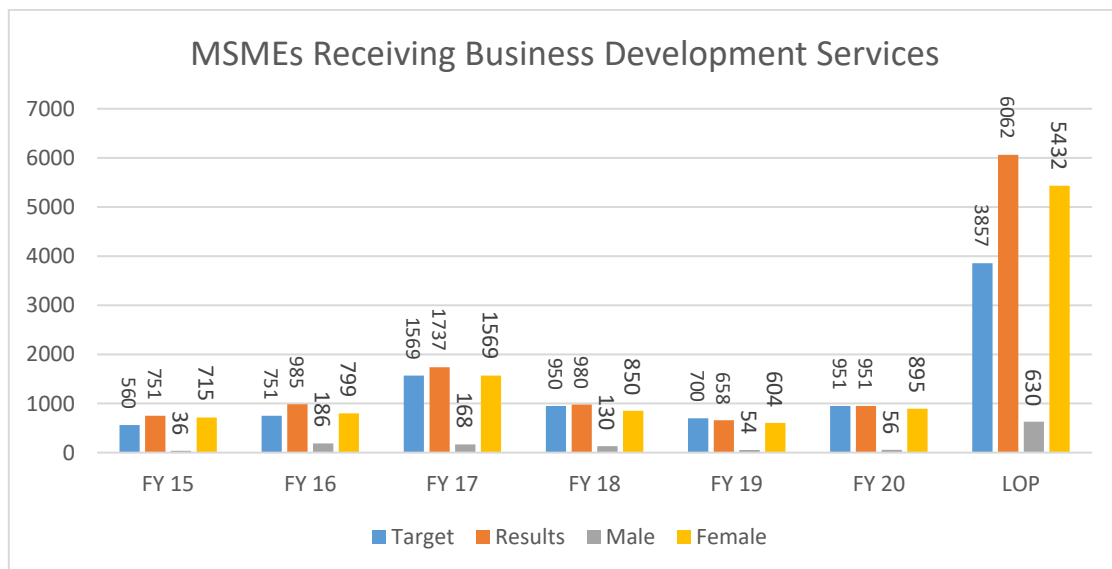
As per FtF Guidance this indicator replaced EG.3.2-17 under which it was reported in FTFMS in FY19. The LOP target of 111,000 was 98 percent achieved with 108,856 individuals comprised of both estuarine and small pelagic fisherfolk applying improved practices or technologies. This includes implementation of the 2019 closed season and 10,134 CIC handed over to the Fisheries Commission in FY21.

**Number of individuals participating in USG-assisted group-based savings, micro-finance or lending programs (EG.4.2-7)**

A VSLA is a savings and loan (credit) mechanism, which is contributing to enhance the resilience of local communities to cope with climate change and dwindling fish resources. This indicator was added in FY20 when 16 new VSLAs were formed with 401 members (44 male, 357 female). The FY 20 and LoP target of 375 set under the Women’s Learning Initiative was overachieved (107%) due to increasing demand leading to formation of additional groups. Over LoP there were 1174 individuals participating in VSLAs through FY20, but as the indicator was only added in FY20 only new members were measured as target and actual.

**Number of Micro, Small and Medium Enterprises (MSMEs), including farmers, receiving business development services from USG assisted sources (Project indicator 3)**

Micro, Small and Medium Enterprises (MSMEs) received various business development services through a well-designed curriculum to improve the knowledge and skills of these beneficiaries. The project cumulatively trained 6062 Micro, Small and Medium Enterprises (MSMEs) representing 157% of the revised LOP target of 3,857. Out of the cumulative total, 630 (10%) are males and 5432 (90%) are females. There are more females because the MSMEs benefiting from the project activities and targeted by the project are primarily women-led fish processing and marketing businesses. The over achievement of target can be attributed to year 3 achievement where MSMEs activities were extended to Volta region based on demand and requests from MSMEs in that region among others.



**Figure 20: Number of MSMEs receiving business development services**

**Value of agriculture-related finance accessed as a result of USG assistance, (EG.3.2-27)**

This indicator sums cash loans disbursed during the reporting years to direct beneficiary producers and MSMEs in rural areas that were in a targeted agricultural value chain, as a result of U.S. Government assistance. The LOP target was overachieved at \$92,876 representing 106% of the LOP target of \$87,029 as MASLOC provided loans to more women than earlier projected in FY19 but could only support businesses with a GH¢ 1,000 per woman loan instead of the GH¢ 2,500 they had applied for.

MASLOC provided loans to 183 beneficiaries. SFMP and partners increased Village Savings and Loan group formation and development so the projects responsiveness to the need for micro-business capital was met in other ways. While MASLOC still provided a few additional loans in Year 6 and SFMP tracked that, no further project resources were invested into this approach due the long duration to have loans let, and as processors were less interested due to the smaller amounts of loans given than originally expected.

**Number of members of producer organizations and community-based organizations receiving USG assistance (Project indicator 4)**

This indicator captures the number of members of producer organizations namely DAA, CEWEFIA, NAFPTA and GNCFC, that the project has assisted either through material support, meetings and trainings during the year under review. A total of 17,975 (10,625 men and 7350 women) representing 135 percent of the revised LOP target of 13,338 was achieved. The Canoe Identification Cards (CIC) were printed and handed over to the FC for distribution to 10,134 canoe owners (approximately 20% of canoes are female owned) in FY21, more than doubling the total.

**Number of micro, small, and medium enterprises (MSMEs), including farmers, receiving agricultural-related credit as a result of USG assistance (Project indicator 5)**

This indicator counts the total number of micro, small, and medium enterprises (MSMEs) that have received U.S. Government assistance that resulted in a loan (in a formal financial institution). All the beneficiaries were females, the reason being that the MSMEs are women owned fish processing businesses. The project cumulatively assisted 492 MSMEs to access loans out of the revised LOP target of 600 representing 82 percent of LoP target. The LoP target was not met due to our decision to curtail project resources on this, and instead, invest in establishing VSLAs as a better option for fish processors and traders. VSLA savings and loans are not captured under this indicator.

**Number of food security private enterprises (for profit), producer organizations, water user's associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance (Project indicator 6)**

The LOP target of 6 has been 100% achieved and includes: National Fisheries Association of Ghana (NAFAG) and Ghana Industrial Trawlers Association (GITA), Development Action Association (DAA), Central and Western Fishmongers Association (CEWEFIA), National Fish Processors and Traders Association (NAFPTA) and Ghana National Canoe Fisherman Council (GNCFC). DAA, CEWEFIA, and NAFPTA continued to receive on-going support through FY20.

**Cross Cutting Indicators****Number of institutions with improved capacity to develop and implement managed access fisheries management plans**

In FY19, a final Organizational Capacity Assessment (OCA) for 10 GoG, and university units and 7 CSOs was conducted and compared to baselines to ascertain the level of capacity

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improvement after receiving trainings in various areas, and the provision of equipment or inputs such as vehicles, computers, printers, servers, furniture etc. The 10 GOG units are MFMD/FC, FSSD/FC, MCS/FC, PHU/FC, MEU/FC, FEU and interagency unit, LUSPA/WR, LUSPA/CR, UCC/DFAS, UCC/CCM. The 7 CSOs are HM, FON, DQF, DAA, CEWEFIA, NAFPTA, GITA, GNCFC, NAFAG.

The baseline OCA for GITA, NAFAG and GNCFC conducted in year 3, was added to the LOP target (increase of 3) in year 4 for the final OCA in FY19. The sub-grant award of the fifth CSO (Daasgift Quality Foundation (DQF) ended in year 3 and was therefore not part of the final OCA. The Fisheries Commission Monitoring and Evaluation Unit (MEU) was added at midterm in FY17 as SFMP support resulted in transformation of the units' operations to paperless survey methods that have been applied for most of their studies since, including a socio-economic study of the May 2019 closed season presented at the August 2019 National Conference.

The final OCA reports indicated that a total of 17 organizations had improved capacity to contribute to the fisheries sector and sustain the gains made by the project in the last five years (89 percent achievement of the revised target of 19). These include the 10 GOG and public university units and 5 of the CSOs. While NAFPTA improved its' score marginally, the GNCFC and NAFAG were not able to improve their OCA scores compared to baseline. The analysis indicated that all 4 of the National Membership Associations still require significant additional improvement to have the adequate governance, financial systems, and essential structures in place to provide high quality and sustainable services to their constituents for implementing and sustaining fisheries management improvements.

It is significant to note that the National Membership Associations were added to the SFMP Organizational Capacity Development component of the project after their critical role as important organizational actors in the sector was understood. The shorter timeframe during which the project worked with them as well as other factors contribute to the low levels of progress documented. The OCA tools applied for the other CSOs were not well tailored to this type of membership association and the low level of organizational capacity at which these organizations started are two such factors. Another is the awareness raising that occurred during the OCA and OCD process. Organizational participants learned and changed their perspectives over the course of the process about what a strong and well-functioning organization entails. Thus, the final OCA scoring tended to result in lower scores on the organizational self-assessment part of the process for some components.

In spite of these challenges, these organizations became much more aware of the gaps between, a.) the role they envision for their organization in the sector and, b.) their organizational realities. In FY20 and after the final OCA, the GNCFC seemed to be taking significant steps to act on implementation of its' constitutional reforms, including the creation of a democratically elected leadership structure through regional elections. Renewal of national level leadership by the elected regional leadership was expected to follow and result in a change for the first time in more than 20 years at the national level. By the end of SFMP this process had not, however, been completed. Stakeholders are hopeful that NAFAG is now in a position to move forward in a more representative and transparent manner following an unexpected vacancy in its' top leadership. SFMP organizational capacity assessment and development support has clearly been one of the catalysts for these nascent developments. Some capacity development support was on-going for a few GOG and CSOs in FY20 and FY21 as SFMP was extended twice and with the disposition of project assets during close-out, but no additional organizational capacity assessments were conducted.

### **Percentage of female participants in USG-assisted programs designed to increase access to productive economic resources (GNDR-2)**

The LoP target was 363 women of the 400 target VSLA participants (91%). The actual was 531 women of a total 615 participants (86%), representing 95% of the LoP target. This indicator was added in Q4 of FY 20. The results reported in FY 20 for new VSLAs is attributed to the Women's Learning Initiative. For FY 21, the target of 40 percent female was based on participants in COVID-19 livelihood grants.

### **Value of new private sector capital investments in select value chains (FTF 4.5.2-38 Old)**

This indicator was introduced in Year 3 to capture the value of private sector capital investment in the selected value chain after the formal partnership agreement (micro-insurance partnership) was officially signed between UT Life Insurance (now Mi Life Insurance), Millennium Insurance, BIMA and Vodafone Ghana. Activities contributing to this indicator came to an end during the first quarter of year 5. Cumulative capital investments were valued at \$67,455.23. There were no annual or LOP targets for this indicator.

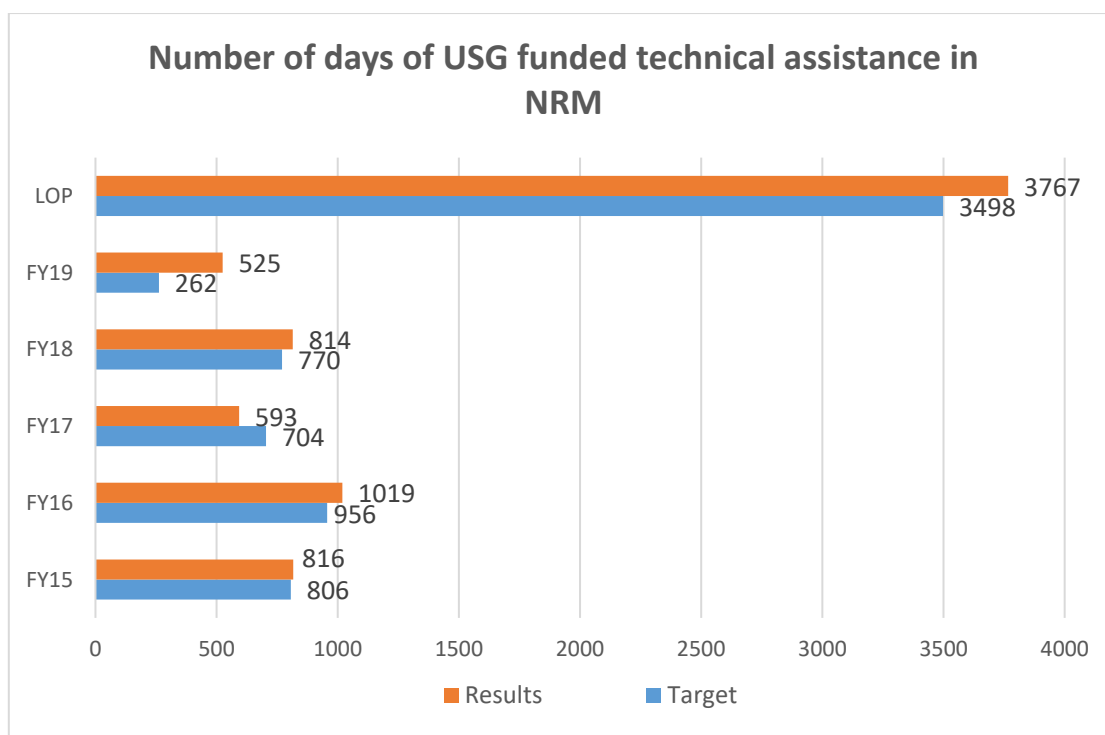
### **Number of public-private partnerships formed as a result of Feed the Future assistance (FTF 4.5.2 (12) Old)**

Cumulatively the project signed two partnership agreements, achieving the LoP target. In Year 2, a micro-insurance partnership agreement was signed between Mi Life Insurance, Millennium Insurance, BIMA and Vodafone Ghana to develop and roll out the Fishers Future Plan (FFP). The FFP is a micro savings and life insurance product especially designed for fisherfolk. The savings component can be used as income support during the closed season when there will be no earnings from fishing. One of the partners BIMA, exited the FFP partnership. The other remaining partners identified a new partner (Golden Key) to take up BIMA's role. Cumulatively, more than 4,060 customers and more than \$430,000 of direct and in-kind private sector investment was made.

In the Year 3, the project again signed a Letter of Collaboration formalizing a partnership between Tigo Ghana, the Fisheries Commission, and the SFMP to extend tailored mobile telephony services to fisherfolk via the Tigo Fisheries Network (TFN). Tigo eventually merged with another Telecom provider –Airtel, and the Tigo Fisheries Network was dropped after this merger.

### **Number of days of USG funded technical assistance in NRM and/or biodiversity provided to counterparts or stakeholders (EG 4.8.1-28 Old)**

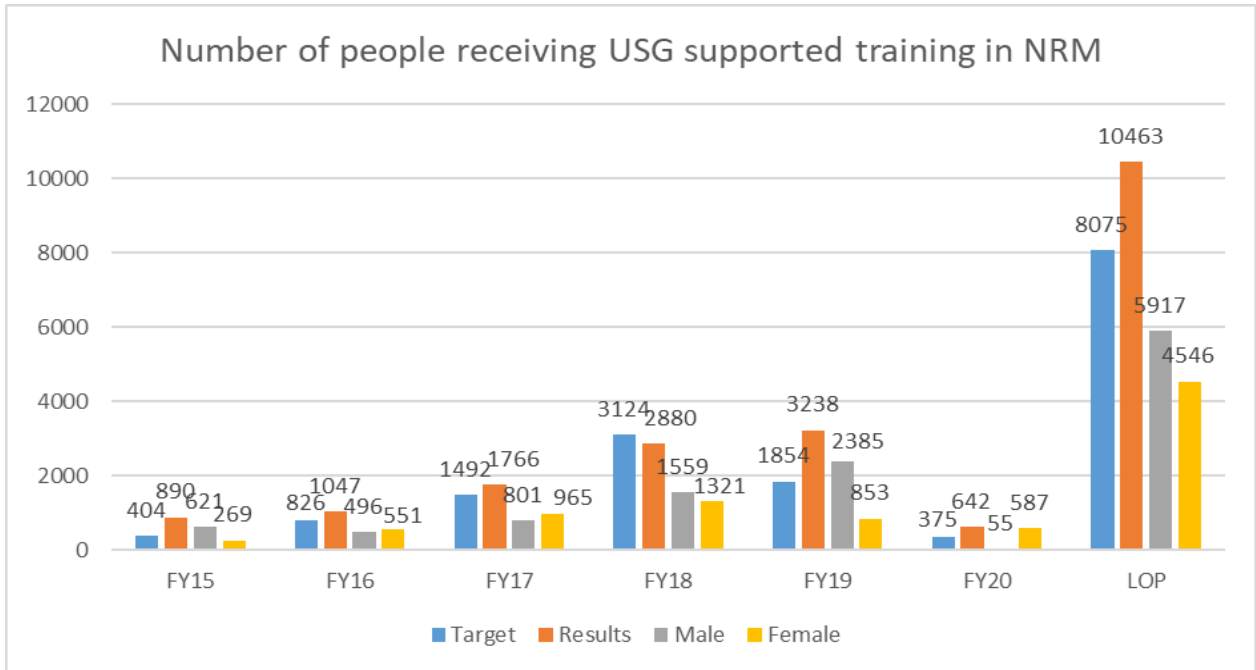
No additional targets or investments were planned after FY19. Cumulatively, 3,767 days representing 108% of the revised LOP target of 3,498 were spent by Technical Experts at various workshops, training events and technical advisory services in natural resources management (NRM) in the last five years. The chart below shows the number of days of used for technical assistance on a yearly basis.



*Figure 21: Number of days of international technical assistance in NRM on yearly basis*

**Number of people receiving USG supported training in natural resources management and/or biodiversity conservation, and climate change, disaggregated by gender (EG.10.2-4)**

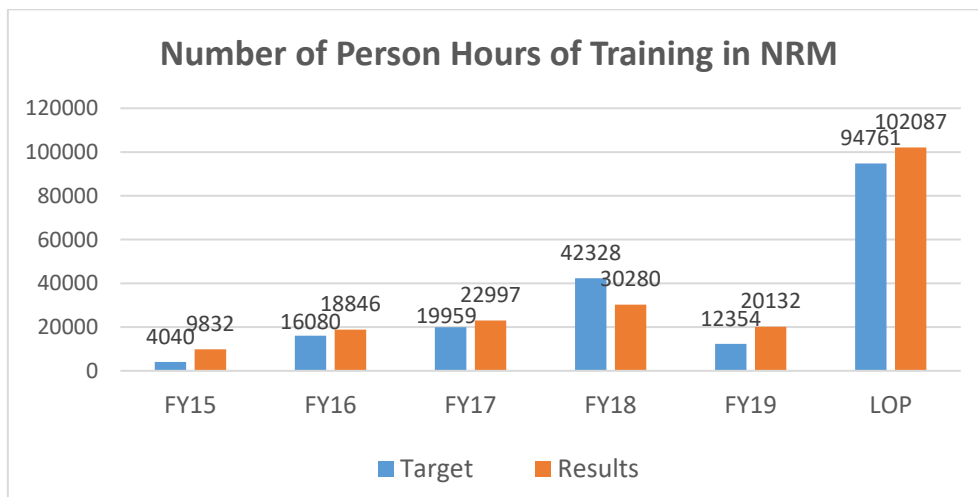
The USG supported training in NRM, over the project implementation period is depicted in the graph below with detailed results by year disaggregated by sex. The LOP target of 7700 was overachieved by 136%. For FY20, the result achieved related to this indicator are 100 % attributable to the Women’s Learning Initiative (WLI).The annual target was overachieved due to high demand for VSLAs among fisherfolks. The training curriculum for the WLI included content on sustainable fisheries and targeted VSLA members. In FY19, key activities such as the F2F dialogues attracted more people than anticipated for discussions on closed season and regarding the canoe registration.



**Figure 22: Number of people receiving USG supported training in NRM**

**Number of person hours of training in natural resources management and/or biodiversity conservation supported by USG assistance (4.8.1-29)**

No additional targets or investments were planned after FY19. This indicator counts the number of USG support training hours that were completed by training participants in NRM. Cumulatively, the project over the five years recorded a total of 102,087 person hours representing 108% of LOP target of 94,761 person hours.



**Figure 23: Number of person hours of training in natural resources management**

**Number of individuals who have received USG-supported short-term agricultural sector productivity or food security training EG.3.2-1**

No additional targets or investments were planned after FY19. This indicator counts the number of fishers and producers to whom significant knowledge or skills have been imparted

through interactions that are intentional, structured and purposed for imparting knowledge or skills. Cumulatively, 10,632 individuals constituting of 4,963 (47%) males and 4,432 (53%) females received significant knowledge and skills through various forms of trainings representing 123% achievement of the revised LOP target.

### **Number of individuals who have received USG-supported degree-granting agricultural sector productivity or food security training EG.3.2-2**

This indicator measures the number of people who are currently enrolled in or have graduated from a degree-granting technical, vocational, associate, bachelor, master, or Ph.D. program. Cumulatively, the project enrolled 5 people (1 male and 4 females) in FY 16 and FY 17 from the various units of the Fisheries Commission and University of Cape Coast (UCC) for master's and a Ph.D. in fisheries related programs at the University of Rhode Island. Four of the students were in master's programs while one was in a Ph.D. program. All graduated. The LoP target was 100 percent achieved.

### **Number of individuals participating in USG food security programs (EG.3.2)**

This indicator counts participants of FtF funded programs, including those the project reaches directly, those reached as part of a deliberate service strategy, and those participating in the markets the project strengthens. Implementing partners track or estimate the number of individual participants across different interventions within their own projects and report numbers of participants reached. The LOP target of 6251 was overachieved by 117 percent with a total of 7325 individuals participating. . The FY 20 target of 550 was over-achieved by 278% due to VSLA trainings. In FY 21, COVID 2 (Economic Safety Net/Cash Transfers) contributed 1905, and COVID 3 (Livelihoods) contributed 214 to this indicator.

### **Number of service providers that receive training, technical assistance, or capacity building in victim-centered and trauma-informed services (PS.5.1-24)**

This indicator added in FY20 counts the number of service providers in anti-Child labor and trafficking receiving technical assistance and training. In FY 20 Anti-CLaT activities implemented by DAA and CEWEFIA contributed to this indicator reaching 656 service providers for 98% achievement of the annual and LOP targets of 670.

### **Number of people trained in prevention (PS.5.3-15)**

This indicator added in FY20 counts the number of people trained in anti-Child labor and trafficking prevention. In FY 20 Anti-CLaT activities implemented by DAA and CEWEFIA contributed to this indicator reaching 296 people for 102% achievement of the annual and LOP targets of 290.

## **COVID 19 Indicators**

### **Landing Site Advocate Polling**

A phone poll of SFMP site advocates is the basis for deriving each of the indicator 7a and 7b results. The site advocates (volunteers that oversee the handwashing stations and supplies at each site and receive a small monthly stipend for keeping the handwashing stations clean and replenishing consumables; water, liquid soap and tissues procured) are phone polled monthly using interactive voice response (IVR), and person to person computer assisted phone polling (CATI) on six core questions. Each of the indicators combines qualitative scores on a number of responses to these questions concerning COVID-Safe practices at a site level (beach or fish landing site, fish market site and or fish processing site, not a measure at an individual or personal scale). These are practices that the SFMP COVID social and behavior change communications program tried to influence, and where SFMP provided hand washing stations and supplies of soap and water for a period of several months (at 242 sites).

**SURVEY QUESTIONS:**

1. How many veronica buckets or washing stations are there at your site?
2. Did the veronica bucket hand washing stations have a supply of water and soap today?
3. They are being used by how many people in the site?
4. Are people staying 6 feet apart, when fish are being landed, processed or sold?
5. How many people are wearing face masks?
6. The people using the handwashing stations today was...

**COVID Safe Practice Score (CSPS):** The CSPS is a non-PMP indicator tracked for purposes of the COVID activity mapper. It totals the score for all 6 questions and scores the site as adequate if the score is greater than or equal to 5 out of a potential total score of 10.

**Results**

The Table below shows the mean COVID-safe practice scores over the five months of monitoring. Differences between months are statistically significantly different (ANOVA and K-W Test for ordinal data). January had the highest mean followed by December and then February. October and November had the lowest scores. Comparing changes between the first and second quarter of the FY 21 fiscal year, Quarter 2 shows a mean of 6.0 compared to Quarter 1 of 5.6. This result is statistically significant (ANOVA and M-W U test). Higher mean scores represent better COVID-safe practices, suggesting that there have been significant improvements in the second quarter compared to the first.

<b>COVID Practice Score Mean by Month</b>			
Month	N	Mean	Std. Deviation
Oct	156	5.57	1.948
Nov	210	5.22	1.996
Dec	143	6.06	2.011
Jan	158	6.16	1.908
Feb	138	5.72	2.075
Total	805	5.71	2.014

<b>ANOVA</b>						<b>Kruskal-Wallis Test</b>	
	Sum of Squares	df	Mean Square	F	Sig.	Total N	805
Between Groups	103.141	4	25.785	6.534	.000	Test Statistic	22.281
Within Groups	3156.839	800	3.946			Degree of Freedom	4
Total	3259.980	804				Asymptotic Sig. (2-sided test)	.000

<b>COVID Practice Scores by Quarter</b>			
Quarter	N	Mean	Std. Deviation
Q1 FY 21	509	5.57	2.011
Q2 FY 21	296	5.96	1.997
Total	805	5.71	2.014



ANOVA						Mann-Whitney U Test	
	Sum of Squares	df	Mean Square	F	Sig.	Total N	805
Between Groups	28.506	1	28.506	7.084	.008	Mann-Whitney U	82965
Within Groups	3231.474	803	4.024			Standardized Test Statistic	2.424
Total	3259.980	804				Asymptotic Sig. (2-sided test)	.015

**Project Indicator 7a: Number of sites (landing beaches, processing centers or fish markets) obtaining hygiene equipment and supplies adhering to COVID-19 prevention protocols.**

**Precise Definition(s):** This indicator measures the number of sites provided with adequate hygienic equipment and supplies that are adhering to COVID-19 prevention protocols (handwashing). Equipment and supplies include a handwashing station with bucket, bucket stand, soap and tissues. The score for this indicator is dichotomized. Adequate hygiene equipment and supplies means the sites had at least one veronica bucket (question 1) and a score greater than zero on the handwashing supplies (question 2). Otherwise, they are considered inadequate. “Adhering to COVID-19 prevention protocols” means a score greater than zero on usage of veronica buckets (question 3).

**Targets:** FY20 – 140 sites, FY 21 – 100 sites, Total 240 sites. The target was meant to represent 80% of the universe of 300 sites originally assumed. However, we realize that the FY21 target should be a cumulative 240 sites, regardless of how many sites were anticipated to achieve this indicator in the start-up period of FY20.

**Results:**

The table below shows the changes in the percent of sites that have adequate equipment and supplies and are adhering to COVID-19 prevention protocols. These differences are statistically significant. January showed the highest percentage (76%) of sites with adequate supplies and equipment and adhering, followed by December (71%). Comparing between Fiscal Year Quarters, Q2 had a statistically significant difference – higher percentage (63%) compared to Q1 (54%), showing improvements in Q2 compared to Q1. Extrapolating across the landing sites being serviced by SFMP (total of 242), 63% would represent 153 landing sites with adequate equipment and supplies and adhering.

Project Indicator 7a Crosstabulation by Month							
		Oct20	Nov20	Dec20	Jan21	Feb21	Total
Adequate and adhering	Count	80	96	101	120	67	464
	% within time period	51.3%	45.7%	70.6%	75.9%	48.6%	57.6%
Not adequate or not adhering	Count	76	114	42	38	71	341
	% within time period	48.7%	54.3%	29.4%	24.1%	51.4%	42.4%
Total	Count	156	210	143	158	138	805
	% within time period	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	51.059	4	.000
N of Valid Cases	805		

Project Indicator 7a Crosstabulation by Quarter				
		Quarter FY 21		Total
		1	2	
Adequate and adhering	Count	277	187	464
	% within Quarter	54.4%	63.2%	57.6%
Not adequate or not adhering	Count	232	109	341
	% within Quarter	45.6%	36.8%	42.4%
Total	Count	509	296	805
	% within Quarter	100.0%	100.0%	100.0%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.876 <sup>a</sup>	1	.015
Continuity Correction	5.523	1	.019
N of Valid Cases	805		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 125.39.			
b. Computed only for a 2x2 table			

**Indicator 7b: Number of sites showing improvement in adherence to social distancing and other good practices.**

**Precise Definition:** This indicator will measure the number of sites showing improvement in social distancing (people staying six feet apart from each other), and other good practices such as wearing of nose masks. The score for this indicator is a summation of the scores on questions number 4 and 5 with a range from 0-4. “Improvement” means an increase in the average COVID-safe practice Index for a site over its baseline.

NOTE: We cannot measure improvement as originally envisioned in this definition following each site over time. This is because not all sites report data via the phone polling and it varies as to which sites report from month to month. We can measure changes in the mean score of all the sites for which there is data each month over time or redefine the indicator similar to how 7a is calculated, whereby we dichotomize an adhering/not adhering score and the extrapolate number of sites adhering. If we just do a summation of the two questions and scoring on the COVID safe practice score question of social distancing and wearing of face masks, the range of scores is 0-4. We can say that a score of 2 or greater is adhering, calculate the percent adhering and extrapolate to number of sites.

**Target:** FY 21 – 300 sites. (only 242 sites were actually serviced for various reasons).

## Results

The table below shows the mean site scores by month concerning adherence to social distancing and other good practices (Project indicator 7b). The differences between months is statistically significant, with February showing the highest mean score followed by January. Comparing data between FY21 quarters, Q2 had a higher mean score compared to Q1 indicating improvements in Q2 compared to Q1. This difference is statistically significant.

Using the dichotomized scoring of sites showing adherence to social distancing and other good practices and comparing the percent adhering to social distancing and other good practices by month, the differences were statistically significant, with February having the highest percentage (67%). Comparing between quarters, Q2 had a higher percentage (61%) compared to Q1 (49%), showing improvements in Q2 compared to Q1. These differences were statistically significant. Extrapolating from 242 total sites, 61% would represent 148 sites that adhered to other good practices (social distancing and face masks). Note that the final Q2 number of sites adhering to other safe practices (Indicator 7b) is similar to those adhering to handwashing practices (Indicator 7a). Compared to Q1 data, where Indicator 7b was lower than 7a, this suggests a greater increase for Indicator 7b between quarters compared to Indicator 7a.

<b>Project indicator 7b by Month</b>			
	N	Mean	Std. Deviation
Oct	156	1.63	1.482
Nov	210	1.55	1.366
Dec	143	1.55	1.408
Jan	158	1.67	1.361
Feb	138	2.14	1.441
Total	805	1.69	1.421

<b>ANOVA by Month</b>						<b>Kruskal-Wallis Test by Month</b>	
	Sum of Squares	df	Mean Square	F	Sig.	Total N	
Between Groups	35.276	4	8.819	4.445	.001	Test Statistic	17.034
Within Groups	1587.084	800	1.984			Degree Of Freedom	4
Total	1622.360	804				Asymptotic Sig. (2-sided test)	.002

<b>Project indicator 7b by Quarter</b>				
FY 21 Quarter	N	Mean	Std. Deviation	Std. Error Mean
1	509	1.57	1.412	.063
2	296	1.89	1.416	.082

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	1.241	.266	-3.048	803	.002

<b>Mann-Whitney U Test Summary Comparing by Quarter</b>	
Total N	805
Mann-Whitney U	84911.500
Asymptotic Sig.(2-sided test)	.002

<b>Dichotomized Project Indicator 7B Crosstabulation by Month</b>						
		Time period				Total
		Oct20	Nov20	Dec20	Jan21	Feb21
Adequate	Count	80	100	69	88	92
	% within time period	51.3%	47.6%	48.3%	56.1%	66.7%
Inadequate	Count	76	110	74	69	46
	% within time period	48.7%	52.4%	51.7%	43.9%	33.3%
Total	Count	156	210	143	157	138
	% within time period	100.0%	100.0%	100.0%	100.0%	100.0%

<b>Chi-Square Tests by Month</b>			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.826	4	.005
N of Valid Cases	804		

<b>Dicotomized_7B Crosstabulation by Quarter</b>				
		FY 21 Quarter		Total
		1	2	
Adequate	Count	249	180	429
	% within Quarter	48.9%	61.0%	53.4%
Inadequate	Count	260	115	375
	% within Quarter	51.1%	39.0%	46.6%
Total	Count	509	295	804
	% within Quarter	100.0%	100.0%	100.0%

<b>Chi-Square Tests by Quarter</b>			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.982	1	.001
Continuity Correction <sup>b</sup>	10.502	1	.001
N of Valid Cases	804		

b. Computed only for a 2x2 table

### Number of functional Social Media Groups (Project indicator 7c)

At the end of the project, a total of 21 social media groups established by SFMP for the COVID response component were functional with 700 persons, representing 88 percent of the LOP target of 24 groups and 78 percent of the LOP target of 901 persons.

Three groups, GTA, GITA, GIFA were not interested in forming groups. No additional effort was made to set up those groups. After the end of the four months airtime and data top up support at the end of Q2, FY21, group membership fell from 787 to 700 in this quarter across the twenty-one groups, with an average of 82% of group members accessing messages. All groups had more than 20% access as per the definition for active.

### US\$ disbursed per household/person (Project indicator 8a)

1905 households received \$52 x 4 months = \$208 each for a total amount disbursed of \$396,240, representing 97 percent achievement of the LOP target of a total of \$416,000 disbursed and the intended amount per household over the intended timeframe. Reaching 5% less than the full 2000 households was due to verification, logistics, and time constraint challenges. Analysis of the beneficiary data shows that 46% were female headed households with no adult male, while 70% were female headed households.

#### Cash beneficiary statistics

Female headed household with no adult male			
		Frequency	Percent
Valid	No	904	54.3
	Yes	762	45.7
	Total	1666	100.0

Sex (M/F)			
		Frequency	Percent
Valid	F	1335	70.2
	M	566	29.8
	Total	1901	100.0

### % of targeted households with steady or decreasing hunger and steady or increasing diet. (Project indicator 8b)

NOTE: The original target was percent of household beneficiaries showing stable or improving scores on these two food security indicators. However, we could not measure improvement as originally envisioned in this definition following each household over time in a panel type study as not every beneficiary household answered the poll at each time they were polled. We can measure changes in the mean scores of all the households surveyed and compare across time periods, and therefore redefine the indicators somewhat, not as a percent but as changes in mean scores over time. For the HFIAS the differences in the scores between the time periods is compared statistically as to whether they are stable or increasing over these time periods. Due to delays in obtaining final lists of beneficiaries, a baseline of beneficiaries was not able to be conducted prior to initial funds being disbursed. However, a baseline from a control group of SFMP activity participants was conducted in Oct. While not exactly comparable as this control group was not necessarily poor households, it does provide some usefulness in

comparison in the absence of a pre survey of cash beneficiaries prior to distribution of funds. For the MMD-W, the mean scores were compared across time periods and the percent obtaining “adequate dietary diversity” (score  $\geq 5$ ) were also compared across time periods. No baseline was obtained for this indicator.

**HFIAS DEFINITION:** The HFIAS score is a continuous measure of the degree of food insecurity (access) in the household in the past four weeks (30 days). It is a globally recognized indicator used by nutrition and donor programs in many parts of the world.

**SURVEY QUESTIONS:** Respondents are asked the following questions. For Questions Q1 – Q 9, if they answer YES, then the “How Often did this happen?” question is asked (rarely, sometimes, often).

Q1. In the past 4 weeks (30 days), did you worry that your household would not have enough food?
Q1.1 How often did this happen?
Q2. In the past 4 weeks (30 days), were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?
Q2.1 How often did this happen?
Q3. In the past 4 weeks (30 days), did you or any household member have to eat a limited variety of foods due to a lack of resources?
Q3.1 How often did this happen?
Q4. In the past 4 weeks (30 days), did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?
Q4.1 How often did this happen?
Q5. In the past 4 weeks (30 days), did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?
Q5.1 How often did this happen?
Q6. In the past 4 weeks (30 days), did you or any household member have to eat fewer meals in a day because there was not enough food?
Q6.1 How often did this happen?
Q7. In the past 4 weeks (30 days), was there ever no food to eat of any kind in your house because of lack of resources to get food?
Q7.1 How often did this happen?
Q8. In the past 4 weeks (30 days), did you or any household member go to sleep at night hungry because there was not enough food?
Q8.1 How often did this happen?
Q9. In the past 4 weeks (30 days), did you or any household member go a whole day and night without eating anything because there was not enough food?
Q9.1 How often did this happen?

**SCORING:** First, a HFIAS score variable is calculated for each household by summing the codes for each frequency-of-occurrence question. Before summing the frequency-of-occurrence codes, code frequency-of-occurrence as 0 for all cases where the answer to the corresponding occurrence question was “no” (i.e., if Q1=0 then Q1.1=0, if Q2=0 then Q2.1 =0, etc.). The maximum score for a household is 27 (the household response to all nine frequency-of-occurrence questions was “often”, coded with response code of 3); the minimum score is 0 (the household responded “no” to all occurrence questions, frequency-of-occurrence questions

were skipped by the interviewer, and subsequently coded as 0 by the data analyst.) The higher the score, the more food insecurity (access) the household experienced. The lower the score, the less food insecurity (access) a household experienced.

For Questions Q1 – Q 9 they are assigned a score for the YES – NO response as shown below. If YES to any of the Q1-Q9 questions, they are then asked the “How Often” question. For the Q1.1 – Q 9.1 questions, they receive a score as shown below for one of the three choices selected – rarely, sometimes, often.

Score	Q1- Q9
0	No
1	Yes
Score	Q1.1 – Q9.1
0	No response (Q1 – Q 9 =0)
1	Rarely (1–2 times)
2	Sometimes (3–10 times)
3	Often (more than 10 times)

## Results

Mean HFIAS Scores of household head cash beneficiary survey respondents are provided below for the months of February and March of 2021. Mean scores for a control group of SFMP training and F2F participants conducted in October 2020 are also provided. There is no statistically significant difference for scores in February and March, but February and March scores are statistically significantly different than the scores of the control group in October. A higher mean score means greater household hunger compared to a lower score. The data suggests that the \$52/ month for 4 months cash benefit may have helped decrease household hunger in beneficiary households compared to control groups, and it was relatively stable through February and March.

Descriptives		
HFIAS Score		
	N	Mean
Oct	64	15.97
Feb	264	11.61
March	236	11.41
Total	564	12.02

ANOVA					
HFIAS Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1129.041	2	564.520	11.283	.000
Within Groups	28067.660	561	50.031		
Total	29196.700	563			

<b>Independent-Samples Kruskal-Wallis Test (Oct-Feb-March)</b>	
Total N	564
Test Statistic	21.996
Degree of Freedom	2
Asymptotic Sig.(2-sided test)	.000

<b>Pairwise Comparisons of time numeric</b>					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. <sup>a</sup>
<b>March-Feb</b>	<b>6.310</b>	<b>14.582</b>	<b>.433</b>	<b>.665</b>	<b>1.000</b>
March-Oct	104.253	22.941	4.544	.000	.000
Feb-Oct	97.942	22.680	4.318	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

<b>Independent-Samples Mann-Whitney U Test (Feb-March)</b>	
Total N	500
Mann-Whitney U	30350.500
Standard Error	1610.913
Standardized Test Statistic	-.498
Asymptotic Sig.(2-sided test)	.619

<b>Group Statistics</b>					
	time numeric	N	Mean	Std. Deviation	Std. Error Mean
HFAS Score	Feb	264	11.61	6.737	.415
	March	236	11.41	7.293	.475

<b>Independent Samples Test</b>						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
HFAS Score	Equal variances assumed	.935	.334	.323	498	.747

### **Indicator 8b: Minimum Dietary Diversity Score – Women (MDD-W)**

**DEFINITION:** The MDD-W is a proxy indicator used to describe one important dimension of women's diet quality (micronutrient adequacy). MDD-W is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality.



For our survey we sampled only adult women of reproductive age 18-49 yrs. old. Another difference with the standard means of collecting information from a respondent is that we are using a phone poll – interactive voice response - which directly asks if they consumed any of the 10 food groups mentioned in the questions below. Normally for this score, an enumerator will ask a respondent what they have eaten in last 24 hours, starting with what did you eat when you woke, late morning, afternoon, etc. and fills in the food group category as a yes or no response each time they mention a food eaten. This is not possible with an automated phone poll survey. Therefore, our MDD-W score may not be directly comparable to others and likely will be a bit less precise compared to the typical methodology.

**SURVEY QUESTIONS:** For each of the following food categories, tell me which you have eaten in the last day and night - over the last 24 hours. YES or NO.

Grains such as rice or corn, noodles, biscuits cassava, yams or other white roots and tubers, and plantains, potatoes or sweet potatoes
Beans, peas and lentils
Nuts and seeds, including groundnut
Dairy such as cheese, yogurt, milk or other milk products
Poultry, meat or fish
Eggs
Dark green leafy vegetables such as cassava leaves, taro, pepper leaves, kontommire
Mangoes or papaya, including palm oil
Other vegetables
Other fruits

**SCORING:** The MDD-W is a summation of the values assigned for YES – NO responses on the 10 questions above. (Yes = 1 No=0). Range of the score is continuous, from 0-10. Each woman is then coded “yes” or “no” for scoring  $\geq 5$  (achieved minimum dietary diversity), followed by a calculation of the proportion of women who score from 5 to 10. The interpretation of the indicator is: “X% of women achieved minimum dietary diversity, and they are more likely to have higher (more adequate) micronutrient intakes than the X% of women who did not.”

## Results

The median score of respondents for the Women’s Minimum Dietary Diversity Score (W-MDDS) was 5.0, with a mean of 4.89. The percent of respondents that achieved a minimum score of  $\geq 5$  (achieved minimum dietary diversity) combining the two time periods was 55.5 percent. There was no statistically significant difference when comparing between the two sampling periods of March and April, hence the respondents who Achieved Minimum Dietary Diversity was stable across these time periods.

Statistics		
WMDDS		
N	Valid	667
	Missing	0

Mean	4.89
Median	5.00
Mode	4
Std. Deviation	2.167

Achieved Minimum Dietary Diversity				
		time		Total
		Feb21	March21	
yes	Count	225	145	370
	% within time	58.6%	51.2%	55.5%
no	Count	159	138	297
	% within time	41.4%	48.8%	44.5%
Total	Count	384	283	667
	% within time	100.0%	100.0%	100.0%

Chi-Square Test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.570	1	.059
Continuity Correction <sup>b</sup>	3.279	1	.070
N of Valid Cases	667		

b. Computed only for a 2x2 table

### Expenditure Survey of SFMP COVID Response Cash Beneficiaries

A simple and quick survey instrument was designed to try to assess how SFMP cash beneficiaries were using the cash benefit provided. Six questions were asked of each respondent of what the funds were used for with a “Yes” or “No” choice of response. For those who choose “yes - used for other purposes” there was no data collected on what those other uses were. The poll results are shown in the table below. Data was collected in February and March 2021 using interactive voice response (IVR) automated phone polling using Engagespark, and person to person computer assisted telephone interviews (CATI) using a Kobotoolbox online form. Calls were made to a database of approximately 1905 male and female household heads who received a cash benefit via mobile money transfer from SFMP - a total of \$208 in four tranches between December 2020 and March 2021. Most received their first payment in late December and their last in March but approximately 200 may have had some monthly payments doubled up due to problems with phone numbers and unsuccessful transfers in prior months There were 196 respondents in February and 241 respondents in March who answered the poll. As the same list was used to poll in both months, some of the respondents may have completed the poll in both months. Respondents answered all six questions. The differences between time periods is statistically significant (Chi-square test with  $p < 0.05$ ).

**Table 22: What respondents used cash benefit funds for.**

Purpose	February 2021			March 2021			Total		
	N	% Yes	% No	N	% Yes	% No	N	% Yes	% No
Funds for food for my family	196	81.1	18.9	241	93.8	6.2	437	88.1	11.9
Funds for schooling of children	196	77.6	22.4	241	85.9	14.1	437	82.2	17.8
Funds for investing in business	196	73.5	26.5	241	46.9	53.1	437	58.8	41.2
Funds placed in a bank account	196	47.4	52.6	241	17.8	82.2	437	31.1	68.9
Loaned money to others	196	33.2	66.8	241	5.0	95.0	437	17.6	82.4
Used for other purposes	196	49.5	50.5	241	34.9	65.1	437	41.4	58.6

The top use of funds was to buy food for the family, followed by schooling of children, and then investing in their business. While the percentages answering each of these questions “yes” was different in the two time periods, the ranking in terms of highest to lowest percent for all questions except “used for other purposes” was the same. In March, more respondents used funds for food and schooling, and less for investing in a business, placing in a bank account, loaned money to others, or for other purposes, compared to February. This suggests that financial needs may vary over time.

The main purpose of the cash benefit was to maintain a minimum food basket for the family. The fact that 88% of respondents said the funds were used to buy food suggests this goal has been met to some degree. However, it is clear that the cash benefit serves other purposes as well, providing benefits to help keep children in school or to support household livelihoods for example high on the list of uses. While we have no data from this poll to support this, these overall benefits could possibly reduce incidences of fishing households trafficking their children as other surveys have found that a main reason fishing households traffic their children is the lack of funds to support the children. The cash benefit clearly helps put food on the table for children as well as help keep them in school. This possible impact should be investigated further in future cash transfer initiatives to fishing households.

#### **Number of methodologies for targeting and monitoring of economic assistance validated (Project indicator 8c)**

A final Ad Hoc Technical Committee meeting reviewed the female-led and male-led approaches used and documented in a final project economic safety net pilot experience guide.

#### **Number of livelihood approaches tested and their effectiveness (Project indicator 9)**

The Livelihood approaches piloted were handwashing soap production, baking of confectionary, Digital TV and air-conditioning installation and repair, completed apprenticeships, and production of alternative products on the Ahotor oven. Data on their effectiveness is as follows. Most participants were earning less than the average income for a fisher (GHS 109) or a fish processor (GHS 250) three months after the conclusion of the livelihoods training. More than half of participants (54 percent) responded that the income earned was not adequate to take care of their needs. Additional time and support could see these incomes rise, but generally results indicate that the tested livelihoods would not provide a strong incentive for fisherfolk to change sectors and may not be adequate to meet the needs of a household during economic shocks induced by COVID-19 or a fisheries closed season.

**Table 23: Income earned per week by livelihood beneficiaries.**

<b>Livelihood Option</b>	<b>Median earned (GHS)</b>	<b>Mean earned (GHS)</b>	<b>Minimum per week (GHS)</b>	<b>Maximum per week (GHS)</b>		<b>Sample Size (N)</b>
Production of handwashing soap	90	179	8	350		12
Baking	46	95	15	175		7
Installation and repairs of digital TV and air-condition	40	40	30	50		5

As of March 2021, none of the training participants were producing alternative products on the Ahotor, as they found the profit margin for these products to be too low to be attractive to them.

## **ANNEX B: SUCCESS STORIES**

The SFMP submitted two similarly formatted one-page success stories and a number of “Telling Our Story” items each reporting quarter and annual report representing all the themes covered in the project. The 47 stories have been edited and assembled in [A Compilation of USAID/Ghana Sustainable Fisheries Management Project Success Stories: 2014- 2021](https://www.crc.uri.edu/download/GH2014_COM106_CRC_FIN508.pdf). ([https://www.crc.uri.edu/download/GH2014\\_COM106\\_CRC\\_FIN508.pdf](https://www.crc.uri.edu/download/GH2014_COM106_CRC_FIN508.pdf)). They are organized by the key themes of the project, as described in detail in the three-volume Lessons Learned report produced in 2021. Many of the success stories feature personal perspectives on the various facets of SFMP’s efforts.

For more background behind each of the stories, readers should consult Lessons Learned [Volume 1](#) for a description of the approach and accomplishments in Legal and Policy Reform, Co-Management and Constituency-Building, Science for Management and Institutional Strengthening. Lessons Learned [Volume 2](#) covers Post-Harvest Improvements, Gender Mainstreaming and Combatting Child Labor and Trafficking. Lessons Learned [Volume 3](#) covers Preventing the Spread and Mitigating the Effects of COVID-19 Among Vulnerable Households.

The stories by theme area are:

### **LEGAL AND POLICY REFORM**

- Fisherman-to-Fisherman Dialogue Promises Reliable Future
- USAID Supports Ghana’s First Closed Season for Artisanal Fishers
- Fisheries Stakeholders Dialogue on Strategies Towards Rebuilding Dwindling Fish Stocks and Saving the Coastal Environment
- Establishing a Closed Season Sustains the Livelihood of Women Oyster Pickers
- USAID Supports Ghana With a Canoe Identification Card

### **CO-MANAGEMENT AND CONSTITUENCIES**

- Ghana Journalists Trained in Fisheries Issues Serve as Model for Africa
- Community Restores Degraded Mangroves Fast!
- A Boost for Sustainable Fisheries practices in Ghana
- A Reward for Good Fisheries Practices
- A Boost for Oyster Fisheries Management in Ghana
- Savings Micro-Link Insurance Addresses Fishers Needs in Ghana
- New Fishers Future Plan Micro-Insurance Gives Fishers a Confident Future
- Fishers Develop Consensus for Fish Stock Recovery in Ghana
- Political Parties Dialogue with Stakeholders on the Future of Ghana’s Fisheries
- USAID Supports Ghana With A Co-Management Policy for the Fisheries Sector

### **SCIENCE FOR MANAGEMENT**

- Fishers Become Researchers in Fight to Restore Stocks
- UAVs Delivering New Information for Vulnerable Communities
- USAID Builds Research Capacity for Sustainable Fisheries in Ghana

### **INSTITUTIONAL STRENGTHENING**

- A New Post-Harvest Fish Processing Training Center in Ghana

## POST-HARVEST IMPROVEMENTS

BEFORE AND AFTER From Ground to Tabletop  
Improving Livelihood of the Fish Smoker  
Women Champion Healthy Fish Campaign  
Fish Processors Finally Access Loans for Improved Smokers  
Community with Access to Little Else, now Food Secure  
Fish Processor Chalks 150% Profit for Adding Value  
Savoring the Benefits of Fisheries Business Development Services  
New Oven Offers a Better Way to Make a Living in Fishing Communities  
USAID Builds Capacity for Healthy Fish Processing in Ghana  
Fish Processors Adopt Hygienic Practices to Improve Quality Fish  
Consumption VSLA Delivers A Better Future for Fishing Communities  
Increasing the Value of Fish, Certification Scheme Promises Healthy Fish Consumption in Ghana  
Microfinance and Small Loan Center Comes Through for Fish Processors  
Ahotor Oven User Wins National Best Fish Processor Award  
VSLA Improves Resiliency of Rural Women in the Volta Region

## GENDER MAINSTREAMING

The Government of Ghana Affirms its Commitment to Gender Mainstreaming in the Fisheries Sector  
Catalyzing Change in Fisheries Management: Women uniting against unsustainable fishing practices  
USAID Recognizes Women's Role in Fisheries

## COMBATTING CHILD LABOR AND TRAFFICKING

FIRST PERSON STORY Victims of Child Trafficking Speak Out  
Fishers Adopt Strategy to Eliminate Child Labor in Ghana  
FIRST PERSON STORY Child Labor Practitioner, Turned-Advocate  
USAID Anti-Child Labor Strategy Finds Success in Coastal Fishing Communities  
Fishing Communities Increase Effort Against Child Labor and Trafficking

## PREVENTING THE SPREAD AND MITIGATING THE EFFECTS OF COVID-19 AMONG VULNERABLE HOUSEHOLDS IN FISHING COMMUNITIES

Diversified Livelihoods for Fisherfolk  
USAID Supports COVID-19 Safety Practices in Coastal Communities  
USAID Supports 2,000 Poor Fisheries Dependent Households with Cash Transfers  
Chief Fisherman Becomes a COVID-19 Agent of Change  
Fostering Sustainable Behavior Change Through Competitions

## ANNEX C: BIBLIOGRAPHY OF PROJECT DOCUMENTS

Two documents were prepared to compile the complete online bibliography of the 517 policy, technical, outreach and program management reports documenting the activities of the SFMP from 2014 to 2021.

1. The [Complete USAID/Ghana Sustainable Fisheries Management Project Bibliography 2014 to 2021](https://www.crc.uri.edu/download/GH2014_COM109_CRC_FIN508.pdf) ([https://www.crc.uri.edu/download/GH2014\\_COM109\\_CRC\\_FIN508.pdf](https://www.crc.uri.edu/download/GH2014_COM109_CRC_FIN508.pdf)) only contains citations and links to the documents.
2. The [Complete USAID/Ghana Sustainable Fisheries Management Project Bibliography 2014 to 2021 with Abstracts](https://www.crc.uri.edu/download/GH2014_COM110_CRC_FIN508.pdf) ([https://www.crc.uri.edu/download/GH2014\\_COM110\\_CRC\\_FIN508.pdf](https://www.crc.uri.edu/download/GH2014_COM110_CRC_FIN508.pdf)) also includes the abstracts of each report as they appear online at the SFMP project page [https://www.crc.uri.edu/projects\\_page/sfmp/](https://www.crc.uri.edu/projects_page/sfmp/).

In addition, the documents can be found on *Ghanalinks.org* --- <https://ghanalinks.org/elibrary> --- by using search term: SFMP or typing in document title or search term. The documents are also accessible through the *USAID Development Clearing House* --- <https://dec.usaid.gov/dec/content/search.aspx>. Use the search term: Ghana SFMP or type in document title for best results.

The publications section of the SFMP project page allows filtering by project intermediate result area. In both compilations, SFMP documents are listed according to the overall project intermediate results framework of the SFMP which served as the structure for the annual work plans and progress reporting, and within that in approximate chronological order following the time when the event, research, or field activity was completed:

IR 1: Strengthened Enabling Environment for Marine Resources Governance (POL)

IR 2: Science and Research Applied to Policy and Management (SCI)

IR 3: Creating Constituencies and Stakeholder Engagement (COM)

IR 4: Applied Management (ACT)

IR 5: Gender Equality and Empowerment (GEN)

IR 6: Public Private Partnerships (PPP)

IR 7: Capacity Development of Targeted Institutions (CAP)

COVID-19 Response (COV):

COVID 1: Fisherfolk at Sites Adhere to COVID-19 Disease Prevention Protocols

COVID 2: Two Thousand Vulnerable Fisheries Households Avoid Extreme Poverty

COVID 3: Government of Ghana Has Evidence on Approaches for Effective Livelihood Assistance

IR 8: Program Management (PGM)

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