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EVALUATION

Fisheries and Coastal Management Capacity Building Support Project Final Performance Evaluation Report

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This publication was produced at the request of the United States Agency for International Development. It was prepared independently by Della E. McMillan, Lynn Hurtak, Annie Dela Akanko, and Evans Arizi.

FISHERIES AND COASTAL MANAGEMENT CAPACITY BUILDING SUPPORT PROJECT FINAL PERFORMANCE EVALUATION

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Photo credit: Centre for Coastal Management, University of Cape Coast. Photo Archive. February 28, 2020. Photo taken by FCMCBSP drone.

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ACRONYMS

AAS	Atomic Absorption Spectroscopy
ACE	Africa Center of Excellence
ACECoR	Africa Centre of Excellence in Coastal Resilience
ANCoRS	Australian National Centre for Ocean Resources and Security
AOR	Agreement Officer's Representative
CBFMG	Community-Based Fisheries Management Group
CBO	Community-Based Organization
CCM	Centre for Coastal Management
CDCS	Country Development Cooperation Strategy
COO	Chief of Operations
COR	Contracting Officer's Representative
CSIR	Council for Scientific and Industrial Research
CSLP	Coastal Sustainable Landscapes Project
CSO	Civil Society Organization
DAA	Development Action Association
DANIDA	Danish International Development Agency
DFAS	Department of Fisheries and Aquatic Sciences
DO	Dissolved Oxygen
DO 2	Development Objective 2
EG	Economic Growth
EQ	Evaluation Question
FASoG	Fisheries and Aquaculture Society of Ghana
FCMCBSP	Fisheries and Coastal Management Capacity Building Support Project
FCR	Findings, Conclusions, and Recommendations
FGD	Focus Group Discussion
FY	Fiscal Year

G2G	Government to Government
GC	Gas Chromatography
GIS	Geographic Information System
GITA	Ghana Inshore Trawlers Association
GoG	Government of Ghana
ICCAT	International Commission for the Conservation of Atlantic Tuna
ICFG	Integrated Coastal and Fisheries Governance
ICM	Integrated Coastal Management
ICZM	Integrated Coastal Zone Management
IGA	Income-Generating Activity
IR	Intermediate Result
IRD	Research Institute for Development
ISO	International Standards Organization
JFCoM	Journal of Fisheries and Costal Management
KII	Key Informant Interview
KNUST	Kwame Nkrumah University of Science and Technology
KRA	Key Result Area
M&E	Monitoring and Evaluation
METSS	Monitoring, Evaluation, and Technical Support Services
MoFAD	Ministry of Fisheries and Aquaculture Development
MOU	Memorandum of Understanding
M.Phil.	Masters of Philosophy
NGO	Non-Governmental Organization
NRM	Natural Resource Management
Ph.D.	Doctor of Philosophy
PIR	Project Intermediate Result
PITT	Performance Indicator Tracking Table
PMB	Project Management Board

Q	Questionnaire
SFMP	Sustainable Fisheries Management Project
SOW	Statement of Work
Sub-IR	Sub-Intermediate Result
TEC	Total Estimated Ceiling
ToT	Training of Trainers
UCC	University of Cape Coast
UDS	University for Development Studies
UENR	University of Energy and Natural Resources
UG	University of Ghana
URI	University of Rhode Island
USAID	United States Agency for International Development
USAID/Ghana	United States Agency for International Development's Ghana Mission
USG	United States Government
VC	Vice Chancellor
VIP	Village Infrastructure Project
VSLA	Village Savings and Loan Association
ZMT	Leibniz Centre for Tropical Marine Research
ZOI	Zone of Influence

EXECUTIVE SUMMARY

EVALUATION PURPOSE

The purpose of this final evaluation was to assess the extent to which the goal and objectives of the United States Agency for International Development (USAID)/Ghana University of Cape Coast (UCC) Fisheries and Coastal Management Capacity Building Support Project (FCMCBSP) have been achieved, and how the implementation of project interventions contributed to achieving USAID/Ghana's Country Development Cooperation Strategy (CDCS) Development Objective 2 (DO 2), "*Sustainable and broadly shared economic growth*," and its Sub-Intermediate Result (Sub-IR) 2.4.2, "*Improved local community management of natural resources*." The evaluation is expected to provide USAID, its implementing partners, and stakeholders in the fisheries and coastal management sector with data on outcomes, best practices, and lessons learned to inform future programming.

ACTIVITY BACKGROUND

In its most recent CDCS, USAID/Ghana committed to supporting "*Improved sustainable management of Ghana's marine and coastal resources*" in its DO 2 results framework and funded three projects to achieve this result: 1) Sustainable Fisheries Management Project (SFMP) (October 2014-April 2021); 2) Coastal Sustainable Landscapes Project (CSLP) (October 2013-September 2019); and 3) FCMCBSP (October 2014-March 2020). FCMCBSP was expected to work with SFMP and CSLP to increase the core capacity of UCC's Department of Fisheries and Aquatic Sciences (DFAS) "*to strengthen UCC's capacity in developing and providing quality and relevant education programs, practical research, and advisory services that will support the management of fisheries and coastal resources on a sustainable basis to enhance the nation's social and economic development.*"[1] The project was designed and executed by DFAS through a five-year government-to-government (G2G) grant from USAID/Ghana to achieve two overlapping Project Intermediate Results (PIRs) and four Key Result Areas (KRAs):

- PIR 1: Organizational and human capacity strengthened:
  - KRA 1.1: Improved infrastructure; and
  - KRA 1.2: Increased technical and scientific knowledge; and
- PIR 2: Increased information and knowledge for natural resource management:
  - KRA 2.1: Increased marine and coastal research and assessments; and
  - KRA 2.2: Communication, extension, and outreach improved.

EVALUATION DESIGN AND LIMITATIONS

Evaluation Purpose and Methods: The evaluation team[2] used a mixed-methods approach to respond to six evaluation questions (EQs) and five sub-questions. This included: 1) a document review; 2) a review of FCMCBSP's monitoring data; 3) key informant interviews (KIIs) and focus group discussions (FGDs); 4) a set of five online questionnaires targeted to five of the seven stakeholder groups; and 5) a technical review of the five FCMCBSP research studies and FishCoMGhana online database by FCMCBSP Final Evaluation External Technical Advisor Evans Arizi. Altogether, the team interviewed 304 people from six stakeholder groups.

[1] UCC. 2014. Detailed Program Description. Provision of Technical and Financial Support to the Department of Fisheries and Aquatic Sciences, University of Cape Coast. Cape Coast: UCC for USAID/Ghana. (July 24, 2014). Pg. 11.
[2] Team Leader Della E. McMillan, Co-team Leader Lynn Hurtak, M&E Survey Specialist Annie Dela Akanko, and External Technical Advisor Evans Arizi.

After collecting the data, the evaluation team engaged in an intensive review of the themes emerging from the interviews for each of the six EQs. It then organized two debriefing sessions with project staff and USAID/Ghana staff to validate the themes from the analysis of the data, which are presented in a summary table (Annex I).

There were several limitations to this evaluation.

- The principal methodological limitation was constructing a sampling frame for the online questionnaires since FCMCBSP did not have a stakeholder database and had to rely on old sign-up sheets from different events. To manage this limitation, the FCMCBSP Support worked with his colleagues to reconstruct a list of all individuals who benefitted from the different trainings in the principal stakeholder institutions. Once this sampling frame was constructed, the evaluation team was able to select a representative sample.
- Another limitation was the difficulty of attributing any result to FCMCBSP alone since some results were the effect of joint activities with SFMP and CSLP. To manage this risk, the project attempted to highlight the critical role both SFMP and CSLP played in providing financial and non-financial support to key activities and results.
- A third limitation was the field portion of the interviews coincided with UCC's winter break, which made it more difficult to interview the current students who had or were currently benefitting from the project and harder to track down the former students' current contact information because many were no longer using the same email addresses. To manage this risk, FCMCBSP: 1) launched a tracer survey of all current and former student beneficiaries and provided the results of this tracer survey to the evaluators; and 2) requested the FGDs at the four sister institutions include as many student beneficiaries as possible.

FINDINGS AND CONCLUSIONS

EQ 1: To what extent has the USAID/UCC FCMCBSP achieved its intended goal and objectives as defined by the results framework?

The evaluation team confirmed through the online questionnaires, FGDs, KIIs, and a review of the project's summary data that FCMCBSP successfully strengthened the core organizational and human capacity of UCC in sustainable fisheries and coastal management; and that DFAS and Centre for Coastal Management (CCM) have leveraged this increased capacity to attract two additional major grants from the World Bank and Danish International Development Agency (DANIDA) and four minor grants from the National Geographic Foundation, the French Embassy, Australian Aid, and the World Academy of Science. Due in large part to FCMCBSP's start-up investment and the additional grants it attracted, UCC is increasingly recognized as the lead university-based center for fisheries and coastal management in Ghana and an emerging regional West African center of excellence.

Based on the external technical review and feedback from the FGDs, KIIs, and online questionnaires, the evaluation team concluded FCMCBSP increased the supply of high-quality marine and coastal resource assessments, and that this information is currently being used and/or likely to be used to inform some of the most critical national-level policy debates on fisheries and coastal management issues. Another important achievement of FCMCBSP was the creation of several critical platforms—e.g. FishCoMGhana, the biannual policy workshop, Journal of Fisheries and Coastal Management (JFCoM), and Fisheries and Aquaculture Society of Ghana (FASoG)—major stakeholder groups all ranked as having greatly increased their access to the information and networks needed to continue to update the knowledge and skills they acquired under FCMCBSP.

The community-based FGDs conducted by the evaluation team confirmed FCMCBSP's internal reports showing the project's community-based livelihood activities were largely unsuccessful in increasing

opportunities for natural resource management (NRM). In contrast, the evaluation confirmed FCMCBSP's non-governmental organization (NGO) partners' reports, which showed the project successfully co-piloted a new model for promoting ecological monitoring of wetlands with two schools in the affected communities, resulting in a host of under-documented positive changes in the lives of both the students and their communities. The same community-based studies confirmed the active engagement of FCMCBSP—in combination with SFMP and CSLP—on the wetlands monitoring activity contributed to the technical and organizational capacity of the two most active NGOs working on coastal management and fisheries issues in Ghana—Hen Mpoano and Friends of the Nation.

EQ 2: What unintended outcomes have the USAID/UCC FCMCBSP's capacity strengthening activities achieved relevant to improving sustainable management of Ghana's marine and coastal resources?

Some of the key unintended outcomes of FCMCBSP include the: 1) dual-degree, joint grooming of graduate students and J-term programs with the University of Rhode Island (URI); 2) media training initiatives; 3) biannual policy conferences; 4) undergraduate research grants; and 5) creation of JFCoM and FASoG.

Many of these unintended outcomes created the chief mechanisms that non-UCC stakeholders who responded to the online questionnaires reported they are using to build and maintain the professional skills and knowledge they developed under FCMCBSP, and some of the same outreach activities have increased the organizational capacity of the institutions they are attached to. To date, however, it is hard to track the participation of or benefits accruing to particular groups and sub-groups of stakeholders from some of these unintended outcomes since they were not fully tracked due to the way FCMCBSP managed its M&E system, which did not include a learning component during its first three years.

EQ 3: To what extent has the USAID/UCC FCMCBSP collaborated with other USAID-funded projects such as CSLP, SFMP, and Government of Ghana (GoG) partners such as Ministry of Fisheries and Aquaculture Development (MoFAD), other donor projects, and the private sector to achieve the overall purpose for strengthening capacity for sustainable fisheries and coastal resources management?

Most stakeholders felt FCMCBSP's broad-based collaboration with a representative sample of the sector's most critical institutional and project partners strengthened their personal capacity and that this capacity-building is contributing to NRM in Ghana. To date, however, it is hard to show a solid link between these capacity-building efforts and the types of institutional capacity-building FCMCBSP was designed to facilitate because it never developed a beneficiary database or focused communication strategy to facilitate communication, capacity-building, and coordination with key partners.

EQ 4: To what extent has the project addressed the gender issues related to capacity-building among the different groups of beneficiaries, and what has the impact been?

The FGDs and KIIs confirm project data that shows FCMCBSP successfully increased the pipeline of Doctor of Philosophy (Ph.D.) and Master of Philosophy (M. Phil.)-educated women for leadership in the fisheries and coastal management sector. The project was less successful in building the capacity of the growing number of women government staff working on fisheries and coastal management issues. For example, only 23 percent of the 71 district-level MoFAD staff who participated in FCMCBSP's short-term trainings and workshops were women despite evidence from MoFAD that about 50 percent of senior technical staff are women. The community-based interviews confirmed project data showing FCMCBSP was very successful in ensuring women participated actively in the FCMCBSP livelihood activities and female students participated at equivalent levels as male students in the community-based wetlands monitoring activities.

EQ 5: To what extent are the USAID/UCC FCMCBSP capacity strengthening interventions likely to continue after United States Government (USG) support ends?

The high levels of stakeholder buy-in observed during the project are likely to continue even though conditions for sustaining some of the project's key platforms—including some widely considered to be examples of best practice—are either assured or likely (but not fully assured) except for the FCMCBSP's support for a series of community-level livelihood diversification activities. Some key second-generation institutional challenges identified in the FGDs and online questionnaires that need to be addressed during the transition year following the end of FCMCBSP include: 1) developing, pilot testing, and scaling up the business plans needed to sustain some of the most critical infrastructure, equipment, vehicles, extension, communication, and outreach platforms created and scaled up under FCMCBSP and SFMP that are not scheduled for support under the Africa Centre of Excellence in Coastal Resistance (ACECoR) project; 2) developing a standard health and safety manual and certification process for all CCM and DFAS activities; 3) shifting the focus of CCM's strategic planning process and donor support away from FCMCBSP to the wider mission of CCM and DFAS in Ghana and West Africa and the new grants FCMCBSP helped attract; and 4) co-defining with the UCC administration an action plan for streamlining CCM and DFAS procedures that complies with UCC rules and regulations for accounting, procurement, equipment installation and maintenance, health and safety standards, M&E, communications, database management, and updates to inform ongoing and projected new activities to the new rules and regulations of the World Bank and other new donors CCM may be adding over the next five years; and an action plan for identifying new UCC-level mechanisms for compensating faculty for time spent on the grants and ensuring grant-getting and grant-related activities count toward UCC tenure and promotion decisions.

In addition to this, stakeholders interviewed in the FGDs and online questionnaires identified a number of examples of best practices and lessons learned, many of which could be applied to other types of capacity-building projects and UCC's next generation of CCM and DFAS programming.

EQ 6: Which USAID/UCC FCMCBSP capacity strengthening activities are the most and least effective at improving sustainable management of Ghana's marine and coastal resources?

The genius of FCMCBSP was its commitment to the identification, pilot testing, and partial scale up of a large number of different platforms that built the capacity of different stakeholder groups from the grassroots to the upper echelons of the Ghana government. For this reason, it is not surprising that the stakeholders who responded to the online questionnaires ranked some of the same activities—like the short-term trainings—as both most and least effective. The four items ranked highest by UCC-based stakeholders were the: 1) renovation and equipping of the offices, lecture and computer rooms, and coastal research library; 2) support for the post-graduate training program; 3) full operationalization of CCM; and 4) biannual policy conferences. The activities ranked highest by the government, NGOs, and producer groups were the: 1) short-term trainings; 2) biannual policy conferences; and 3) workshops. The UCC staff and board ranked FCMCBSP's community-based capacity-building and livelihood activities as least effective. Not surprisingly, a relatively high percentage of government stakeholders ranked the research and policy review activities, which they were less involved in, as least effective. The relatively high percentage of media, NGO, producer organization, and government stakeholders who ranked the conferences, workshops, and short-term trainings as least effective (while others in these groups ranked them as most effective) seems to be directly related to whether or not they had personally received an invitation to the event. The lack of a beneficiary stakeholder database made it difficult to document the wider impact of these activities on stakeholder capacity.

1.0. EVALUATION OVERVIEW

1.1. EVALUATION PURPOSE

The purpose of the final evaluation was to assess the extent to which the goal and objectives of the United States Agency for International Development (USAID)/Ghana University of Cape Coast (UCC) Fisheries and Coastal Management Capacity Building Support Project (FCMCBSP) have been achieved, and how the implementation of project interventions contributed to achieving USAID/Ghana's Country Development Cooperation Strategy (CDCS) Development Objective 2 (DO 2), "*Sustainable and broadly shared economic growth*," and its Sub-Intermediate Result (Sub-IR) 2.4.2, "*Improved local community management of natural resources*."[3] The evaluation specifically identifies project components which either worked well or not, and provides USAID, its implementing partners, and stakeholders in the fisheries and coastal management sector with data on outcomes, best practices, and lessons learned to inform future programming.[4]

The primary audience and intended users of the FCMCBSP evaluation are the USAID/Ghana Mission, UCC, and its Department of Fisheries and Aquatic Sciences (DFAS), which are expected to use some of the evaluation results and lessons learned to inform future strategic planning and program development.

1.2. EVALUATION QUESTIONS

USAID/Ghana asked the evaluation team to focus on six evaluation questions (EQs) and five sub-questions:

1. To what extent has the USAID/UCC FCMCBSP achieved its intended goal and objectives as defined by the results framework?
    - 1.a. IR 1: Strengthened organizational and human capacity: Has organizational and human capacity been strengthened as a result of improved infrastructure (Key Result Area [KRA] 1.1) and increased technical and scientific knowledge (KRA 1.2)?
    - 1.b. IR 2: Increased information and knowledge for natural resource management (NRM): Have efforts to increase marine and coastal research and resource assessment (KRA 2.1) and improved communication, extension, and outreach (KRA 2.2) resulted in increased information and knowledge for natural resource management?
    - 1.c. Has the implementation of community-based activities resulted in increased opportunities for improved natural resource management and/or income generation amongst the rural families, and has it impacted the target communities?[5][6]
2. What unintended outcomes have the USAID/UCC FCMCBSP's capacity strengthening activities achieved relevant to improving sustainable management of Ghana's marine and coastal resources?
3. To what extent has the USAID/UCC FCMCBSP collaborated with other USAID-funded projects such as Coastal Sustainable Landscapes Project (CSLP), Sustainable Fisheries Management

[3] USAID. 2019. Draft UCC FCMCBSP Evaluation Statement of Work (SOW). Pg. 1. April 24, 2019. (Annex II)
[4] USAID. 2019. Draft UCC FCMCBSP Evaluation SOW. Pg. 1. April 24, 2019. (Annex II)
[5] The evaluation team recommended adding sub-questions 1.c.i and 1.c.ii in order to clarify the original expectations of the project for these activities. These changes were approved by both METSS II and USAID/Ghana.
[6] Although the evaluation team recommended adding two additional sub-questions (1.c.i and 1.c.ii), Monitoring, Evaluation, and Technical Support Services (METSS) II recommended deleting them in the last draft of the Final Performance Evaluation Work Plan, and the evaluation team accepted that recommendation.

Project (SFMP), and Government of Ghana (GoG) partners such as the Ministry of Fisheries and Aquaculture Development (MoFAD), other donor projects, and the private sector to achieve the overall purpose of strengthening capacity for sustainable fisheries and coastal resources management?

4. To what extent has the project addressed the gender issues related to capacity-building among the different groups of beneficiaries, and what has the impact been?
5. To what extent are the USAID/UCC FCMCBSP capacity strengthening interventions likely to continue after United States Government (USG) support ends?
    5.a. Is stakeholder buy-in likely to continue or be increased after the current project expires?
    5.b. What are the lessons learned and best practices, and from which stakeholders or beneficiaries, in achieving results?
6. Which USAID/UCC FCMCBSP capacity strengthening activities are the most and least effective at improving sustainable management of Ghana's marine and coastal resources?

2.0. PROJECT BACKGROUND

2.1. MECHANISM DESCRIPTION

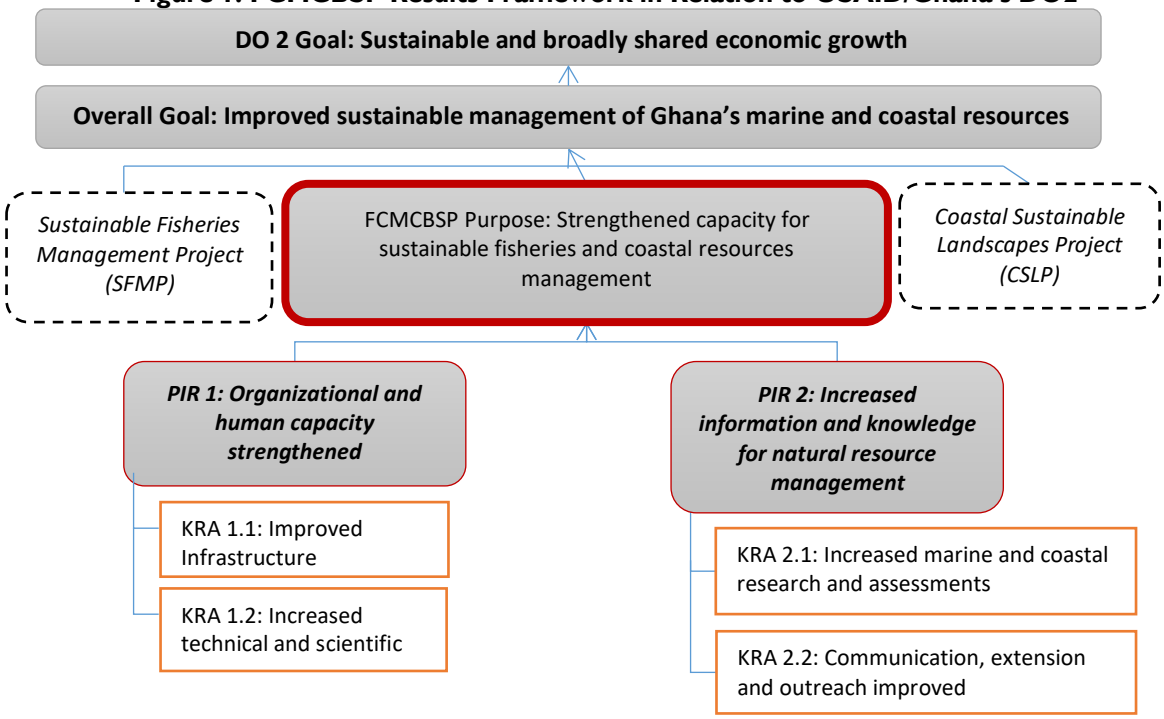
2.1.1. CONTEXT

Over 60 percent of Ghana's industries lie within the coastal zone, where marine capture fisheries are the major economic activity. The Western Region, in particular, is dependent on renewable and non-renewable natural resources that include not only fisheries, but also mining, oil and gas, and forestry. These and other activities focused on economic growth and development may, at the same time, threaten the health of Ghana's coastal ecosystems. Ghana's Environmental Action Plan cites strong evidence that Ghana's coastal ecosystems are already seriously degraded.[7] Ghana is faced with growing challenges in managing its coastal and marine resources, as evidenced by the dramatic decline of fish stocks and the degradation of coastal resources. Further concerns include the overexploitation of fisheries at artisanal and industrial scales using unsustainable fishing methods and the pollution of coastal ecosystems. Coastal ecosystems—especially estuaries, lagoons, and their associated wetlands—are becoming increasingly impacted by activities within their catchment areas, with deforestation, intensive agriculture, damming, and irrigation all changing the nature of material fluxes (water, sediment, nutrients, and pesticides). It is apparent Ghana's marine and coastal resources are being lost or damaged in ways that are diminishing biodiversity. This is attributable to many factors, including deficiency in monitoring and enforcement of regulations; lack of education, training, research, data gathering, and analysis; and low government investments in capacity-building for effective management. The lack of adequate human resource capacity, good governance, and well-functioning systems impede NRM in Ghana.

Given the growing challenges in managing Ghana's coastal and marine resources, USAID/Ghana identified *"improved sustainable management of Ghana's marine and coastal resources"* as one of the key results it was supporting under DO 2 of the Mission's CDCS. FCMCBSP was conceptualized as one of three projects designed to achieve this result (Figure 1).[8]

[7] USAID/Ghana CDCS Fiscal Year [FY] 2013-2019
https://www.usaid.gov/sites/default/files/documents/1860/CDCS_Ghana_December_2019_1.pdf
[8] The three projects were: SFMP (October 2014-April 2021); CSLP (October 2013-September 2019); and FCMCBSP (October 2014-March 2020).

Figure 1. FCMCBSP Results Framework in Relation to USAID/Ghana's DO2[9]



Assumptions: Absence of disruptions in the academic calendar, stable prices of items to be purchased (vehicles,

Source: USAID. 2019. Draft Statement of Work (SOW). UCC FCMCBSP Evaluation SOW. Pg. 19 (draft). April 24, 2019. (Annex II)

In efforts to support training, research, and extension services in marine and coastal management, DFAS considered the establishment of a Centre for Coastal Management (CCM) in 1997, which became reality in 2010 when the USAID/Ghana-funded Integrated Coastal and Fisheries Governance (ICFG) Initiative supported the design and the development of a strategic plan for CCM. Subsequently, CCM was approved by UCC's Academic Board in December 2013 and aims to be a center of excellence and an innovative partner in marine and coastal resource science, training, and applied management (Annex VII).

2.1.2. GOALS AND OBJECTIVES

The overall goal of FCMCBSP is *"improved sustainable management of Ghana's marine and coastal resources."* Its stated purpose is *"strengthened capacity for sustainable marine and coastal resource management."* FCMCBSP initially had three Project Intermediate Results (PIRs), which were reduced to two by merging expected results in research and extension (Figure 1).

FCMCBSP was expected to collaborate with the two other USAID/Ghana-funded fisheries projects—SFMP and CSLP—to increase the core capacity of UCC's DFAS to collaborate with its principal government and non-governmental partners. The underlying development hypothesis is that **IF** FCMCBSP—in combination with SFMP and CSLP—is successful in (Figure 1):

Strengthening the organization and human capacity of UCC's DFAS and CCM (PIR 1; Figure 1) through:

[9] Key Assumptions: 1) Absence of disruptions in the academic calendar; and 2) Stable prices of items to be purchased (vehicles, furniture, laboratory equipment).

- Investing in their infrastructure of laboratories, computer rooms, and the library (KRA 1.1; Text Box 1); and
- Increasing the technical and scientific knowledge of their research staff, lecturers, technicians, and graduate and undergraduate students to carry out research and provide training to students in fisheries and coastal management (KRA 1.2; Text Box 1); and

Increasing information and knowledge for natural resource management (PIR 2; Figure 1) by helping UCC to:

- Increase the number and quality of marine and coastal research and resource assessments (KRA 2.1; Text Box 1); and
- Improve communication, extension, and outreach to all key stakeholders in the sector (KRA 2.2; Text Box 1);

THEN the result will be *"strengthened capacity for sustainable fisheries and coastal management,"* which will contribute to USAID's overall goal of *"improved sustainable management of Ghana's marine and coastal resources"* (Figure 1).

Text Box 1. Principal FCMCBSP Activities for the Four KRAs (Fiscal Year [FY] 2015-2019)

KRA 1.1: Improved Infrastructure

Activity 1.1.1: Renovating and equipping fisheries and coastal research laboratory
Activity 1.1.2: Refurbishing and equipping office/lecture/computer rooms and library
Activity 1.1.3: Acquisition of vehicles to support educational, training, research, and extension activities

KRA 1.2: Increased Technical and Scientific Knowledge

Activity 1.2.1: Academic and technical staff capacity strengthening
Activity 1.2.2: Operationalization of CCM
Activity 1.2.3: Support for postgraduate (Master of Philosophy [M.Phil.] and Doctor of Philosophy [Ph.D.]) training program
Activity 1.2.4: Undergraduate research grants

KRA 2.1: Increased Marine and Coastal Research and Resource Assessments

Activity 2.1.1: Conducting fisheries stock assessment
Activity 2.1.2: Conducting research and assessment on marine fisheries governance issues
Activity 2.1.3: Research on fish and shellfish of commercial value
Activity 2.1.4: Analysis of value chains of fish trade
Activity 2.1.5: Monitor the biodiversity and health of coastal ecosystems
Activity 2.1.6: Developing marine and coastal fisheries database

KRA 2.2: Communication, Extension, and Outreach Improved

Activity 2.2.1: Developing material and conducting training on integrated coastal management
Activity 2.2.2: Developing material and conducting training on fisheries management
Activity 2.2.3: Developing manuals and updating training materials on climate change adaptation and mitigation
Activity 2.2.4: Developing material and conducting training on the use and application of Geographical Information Systems (GIS)
Activity 2.2.5: Engaging policy makers to address coastal and fisheries issues (including two national conferences and creation of a new online Journal of Fisheries and Coastal Management)
Activity 2.2.6: Building institutional partnerships and collaboration
Activity 2.2.7: Wetlands ecological health monitoring using school clubs and communities
Activity 2.2.8: Strengthening community-based groups[10]
Activity 2.2.9: Promoting supplementary livelihoods in coastal communities

Source: UCC. 2014. Detailed Program Description: Provision of Technical and Financial Support at the Department of Fisheries and Aquatic Sciences, University of Cape Coast. Cape Coast: DFAS for USAID/Ghana. July 2014 updated by the FCMCBSP Manager and M&E Coordinator. November 15, 2019.

2.1.3. TARGET AREAS AND TARGET POPULATION GROUPS

The principal zone of influence (ZOI) was eight districts in the coastal area of the Western and Central regions of Ghana where the project implemented several activities (Annex II; Annex V, Table 32). Four of the eight districts also benefitted from community-based supplemental livelihood activities (for snail and oyster farming and beekeeping) and strengthening of community-based fisheries management groups (CBFMGs) (Annex V, Table 32). In some districts, the project supported applied research and facilitated

[10] Leadership and business advocacy training was done in the eight original communities targeted for livelihood activities under Activity 2.2.8.

the participation of officials from the most relevant district offices involved in NRM in the two national policy conferences (Annex V, Table 32). In addition to this, short-term training participants were invited from government agencies located in 38 districts and municipalities within seven regions of Ghana (Annex V, Table 32).

FCMCBSP worked with approximately 1,384 direct beneficiaries, including: 258 staff from national, regional, and local government agencies in 38 different municipalities and districts and eight regions; 388 faculty, staff, graduate, and undergraduate students at UCC and four other major academic institutions working on fisheries and coastal management issues in Ghana—the University of Ghana (UG) in Legon; the University for Development Studies (UDS) in Tamale; the University of Energy and Natural Resources (UENR) in Sunyani; and Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi; 523 community-based resource users and their community-based organizations (CBOs) in the Central and Western Regions; 73 journalists attached to 21 media outlets; 120 staff associated with national and international non-governmental organizations (NGOs) and development partners; and some of the key staff associated with the major private-sector actors in the fisheries sector, including five producer groups and unions.[11]

2.1.4. PROGRAM IMPLEMENTATION PLAN

FCMCBSP is implemented through UCC's DFAS under the oversight of the nine-person FCMCBSP Project Management Board (PMB) established by the UCC Vice Chancellor (VC). The PMB has fiduciary responsibility, serves as an advisory and decision-making authority for the project, has the responsibility of approving project work plans and budgets, and monitors its activities on a regular basis. The day-to-day management of the project is overseen by a Project Manager, with the support of a Monitoring and Evaluation (M&E) Coordinator, both Senior Faculty. Since late Fiscal Year (FY) 2015 they have been assisted by six FCMCBSP-funded Research Assistants, and added two permanent CCM Research Fellows in FY 2018.

[11] UCC FCMCBSP monitoring and evaluation (M&E) database, March 2020.

3.0. EVALUATION METHODS AND LIMITATIONS

3.1. EVALUATION METHODOLOGY

The evaluation team used a mixed-methods approach to collect and analyze data to complete the performance evaluation within the timeline and budget constraints. The team used document review, key informant interviews (KIIs), focus group discussions (FGDs), and online questionnaires targeting key project beneficiaries and participants to gather quantitative data to support the evaluation findings and conclusions. These data-collection methods are described in detail below. The approved evaluation work plan contains the initial evaluation team's methodology and anticipated limitations.[12]

3.1.1. DOCUMENT REVIEW

In conjunction with the pre-planning process, the FCMCBSP M&E Support developed and stored all necessary FCMCBSP documents in a Google Drive folder. A full review of these documents, reports, studies, and surveys helped the evaluation team design the instruments for the questionnaires, FDGs, and KIIs. The review process also helped the evaluation team:

- Develop a number of summary tables describing the key project activities (Annex V);
- Carry out a cumulative update of the project's Performance Indicator Tracking Table (PITT) (Annex III);
- Establish a full list of the major project stakeholders and their contact information as a basis for sampling (Annex IV, Table 9); and
- Identify the need for the project to develop a comprehensive list (and contact information) of all undergraduate and graduate students who received project training and funding.[13]

3.1.2. DATA COLLECTION INSTRUMENTS

Based on its initial understanding of the project, the evaluation team adopted a mixed-methods approach to assess its performance. This methodology and a draft of the research instruments are described in the evaluation work plan.[14]

3.1.3. QUALITATIVE DATA COLLECTION

Design: In an effort to reduce the complexity of note taking, data entry, and analysis during the planning period, the evaluation team opted for single FGD/KII guide that asked a series of questions needed to answer the six EQs for all of the stakeholder groups except the two community-based groups (Annex IV, Table 11). The single FGD/KII guide was used for all FGDs and KIIs during the data-collection phase. While certain groups were asked all of the questions, other questions—like those related to

[12] Della E. McMillan, Lynn Hurtak, and Annie Dela Akanko. 2019. Work Plan Final Performance Evaluation of the Fisheries and Coastal Management Capacity Building Support Project. Accra, Ghana: METSS II for USAID/Ghana Economic Growth (EG) Office. December 3, 2019.
[13] To address this issue, the evaluation team helped an FCMCBSP research assistant develop a separate follow-up study for all UCC graduate students as well as the undergraduate students who benefitted from the undergraduate research grants at UCC and its four sister institutions managed by the project (Activity 1.2.4, Text Box 1).
[14] Della E. McMillan, Lynn Hurtak, and Annie Dela Akanko. 2019. Work Plan Final Performance Evaluation of the Fisheries and Coastal Management Capacity Building Support Project. Accra, Ghana: METSS II for USAID/Ghana EG Office. December 3, 2019.

management and M&E—were asked of only one group. A separate FGD checklist was developed to guide the evaluators' community-level interviews with: 1) two of the four CBFMGs; and 2) two junior high school programs to promote community-based wetlands monitoring.[15] Although each case study included multiple interviews, the evaluation team used the same guide. The FGD/KII guide was developed in close collaboration with the FCMCBSP M&E Coordinator and M&E Support.

Sampling: During the same pre-planning process, the FCMCBSP M&E Coordinator and M&E Support came up with a preliminary list of 638 key stakeholders in seven groups targeted for FGDs, KIIs, and the online questionnaires, plus a list of the ten community groups where FCMCBSP was active (Table 1).[16] The evaluation team attempted to conduct at least one FGD for each of the major stakeholder groups. Although this list was developed with the FCMCBSP M&E Support, the final selection of the individuals who attended the interview was based on the focal person the Evaluation Team Leader communicated with when setting up the interviews (Annex IV, Table 10).

[15] In most cases, these community-level interviews consisted of a series of separate FGDs with different sub-groups—like the teachers, community leaders, and students in the case of the two community-based wetlands monitoring sites. In each case, however, the interviews were consolidated into a single form and counted as only one FGD.

[16] During Step One of the proposed five-step process for determining the sample frame, the FCMCBSP M&E Support alerted the evaluation team to a number of unforeseen problems with the development of the lists. The chief problem was most records on conference attendance and short-term trainings were handwritten and/or incorrectly typed in. To get around this problem the M&E Support embarked on a laborious process of consolidating the lists by stakeholder group before he was able to verify the addresses of the stakeholders.

Table 1. Number of FGDs and KIIs; Number of FGD, KII, and Online Questionnaire Participants; and Percent of Initial Stakeholder List Totals from Which Sample Was Drawn for the FCMCBSP Final Performance Evaluation, January 2020

Stakeholder Group	# of FGDs	# of KIIs	# of FGD Participants	# of KII Participants	# of Online Questionnaire Participants	# of People Interviewed by KII, FGD, or Online Questionnaire (No double counting)	# of People from Which Sample Was Drawn[17]
Stakeholder Group 1: Project staff, oversight committees, administrators, and technical consultants	2	10	14	11	21	31	38
Stakeholder Group 2: Government agencies (local, regional, and national)	2	3	15	7	70[18]	89	261
Stakeholder Group 3: Academic and research institutions	5	2	35	7	23	64	
3.a. UCC	(3)	(0)	(19)	(0)	(23)	(41)	174
3.b. Other universities[19] (does not include students)[20]	(2)	(2)	(21)	(2)	(0)	(23)	51
Stakeholder Group 4: Other USAID-funded fisheries projects (SFMP and CSLP)	0	2	0	4	0	4	N/A
Stakeholder Group 5: Local communities, CBOs, and resource users	5	2	82	6	9	95	

[17] Annex IV, Table 9

[18] Seventy-three (73) online questionnaires were received. Unfortunately, three of the people were actually employees of UCC. These three employees were deleted from the database, which is why only 70 of the 73 questionnaires are included in the analysis in Annex IV.

[19] UG, UDS, UENR, and KNUST.

[20] Since FCMCBSP did not have an accurate list of all its undergraduate and graduate student beneficiaries, the project conducted its own independent tracer survey. The evaluation team was told it would not be appropriate to send a separate survey to the same group, so student beneficiaries were not included in this group.

Stakeholder Group	# of FGDs	# of KIIs	# of FGD Participants	# of KII Participants	# of Online Questionnaire Participants	# of People Interviewed by KII, FGD, or Online Questionnaire (No double counting)	# of People from Which Sample Was Drawn[17]
5.a. Community-based activities				(77)	(0)	(77)	
5.a.1. Livelihood activities	(1)	—[21]	(9)				8 communities
5.a.2. Ecological monitoring of wetlands	(1)	(0)	(68)	2			2 communities, 2 schools, 10 teachers
5.b. NGO/CBO partners	(1)	(1)	(5)	(6)	(9) merged for groups 5.b and 5.c	(15)	21 (from 8 NGOs)
5.c. Fisheries producer groups/unions	(1)	(1)	(5)	(6)		(3)	20
Stakeholder Group 6: Media	1	1	9	1	17	18	70 (21 outlets/ stations)
Stakeholder Group 7: USAID/Ghana	0	1	0	3	0	3	3
Total				194	140	304	638

Source: Annex IV, Tables 9 and 10.

[21] Due to the difficulty of setting up interviews with the actual participants at the second site, the evaluators met with a district official involved in the pilot, which is reported under Stakeholder Group 2.

Comparing the number of people interviewed with the original stakeholder list in the evaluation plan, this sample was highly representative.

- **Stakeholder Group 1**: Seventy (70) percent of the current and former staff were interviewed; over 200 percent of the project management team and PMB since an exhaustive list of former members were also interviewed; and 30 percent of the technical consultants from other universities and institutions contracted to execute activities were interviewed.
- **Stakeholder Group 2**: Twenty-nine (29) percent (42/147) of the government agency stakeholders who participated in project-sponsored trainings responded to the online questionnaire, and another 22 government officials (some who participated in the training, some who did not) participated in the FGDs/KIIs.
- **Stakeholder Group 3**: Twenty-six (26) of the 44 (54 percent) faculty in DFAS and other departments (who were not project staff or PMB members) responded to the questionnaire and/or were interviewed; 23 of the 51 (45 percent) faculty and undergraduate students who participated in the undergraduate research fellowship program and other activities were interviewed in FGDs.
- **Stakeholder Group 4**: The three SFMP staff with the most involvement with FCMCBSP were interviewed in an FGD. Since CSLP closed in 2018, the evaluation team was only able to interview one person in a KII.
- **Stakeholder Group 5.a**: The evaluators conducted interviews with school teachers, community leaders, current students, and graduates in both communities (100 percent) where FCMCBSP supported ecological monitoring of wetlands through local schools and interviewed in three of the eight communities (38 percent) where the project supported community-based supplementary livelihood activities.
- **Stakeholder Group 5.b**: Fifteen (15) of the 21 (71 percent) most active NGO collaborators were interviewed in FGDs and/or responded to the online questionnaire.
- **Stakeholder Group 5.c**: The evaluation team interviewed three of the 20 (15 percent) most-active fisheries producer groups/unions that collaborated with the project.
- **Stakeholder Group 6**: Eighteen (18) of the 70 media representatives (26 percent) who participated in project trainings were interviewed in FGDs or responded to the online questionnaire.
- **Stakeholder Group 7**: All three USAID officers most involved with the project were interviewed in two FGDs.

The chief exception was the under-representation of former graduate students who benefitted from the project because the interviews were conducted at the end of the winter break. To address this issue, FCMCBSP conducted a tracer survey for all current and former students—25 percent of current and former UCC students and 20 percent of student beneficiaries at the other universities responded.[22] Despite the interviews occurring over winter break, the evaluators did manage to interview five undergraduates and seven graduate students at UCC and 15 undergraduates in the FGDs at their four sister institutions—UG, UDS, UENR, and KNUST.

Data Collection: The FGDs and KIIs were conducted in Accra, Cape Coast, Takoradi, and through field visits to two district-level administrative centers where the project-supported community-based

[22] Twenty-five (25) percent of DFAS students polled in the tracer survey and 20 percent of the undergraduate students at the four sister institutions responded to the questionnaire. In addition, the evaluators interviewed 24 students (14 male and 10 female) in person at UCC and 12 students (five undergraduate and seven graduate) responded to the online questionnaire. Six students participated in the FGDs at the four sister institutions. (Annex IV, Table 9).

activities were implemented (one in Western Region and one in Central Region) (Annex IV, Table 8). The FGDs and KIIs were carried out in English and local languages with a translator where required.

One evaluation team member was tasked with taking master notes for each interview. Another kept track of all the interviews (including documentation of all individuals the team met), cleaned up all data collected using the data collection tools, and transferred the data to a master file. She also conducted an initial analysis of the FGD for each stakeholder group that was then summarized in order to identify the frequency and disparity trends of different stakeholder responses to the questions (Annex IV, Tables 11 and 12). Altogether, the evaluation team completed 34 FGDs/KIIs[23] with 194 persons, including the community-based groups (44 males; 111 females; and 39 junior and elementary school students[24]) (Table 1).

3.1.4. QUANTITATIVE DATA COLLECTION

In an effort to provide a quantitative verification of the qualitative data collected by the FGDs and KIIs, the evaluators proposed sending a series of online questionnaires to all the individuals who participated in the FCMCBSP-sponsored short-term trainings and conferences.[25]

Design: During the pre-planning period, the evaluation team developed five questionnaires that asked a series of questions to answer the six evaluation questions. Each questionnaire was adapted to a specific stakeholder group and developed in close collaboration with the FCMCBSP M&E Coordinator and M&E Support.

Sampling: The evaluation team proposed a two-step process for determining the sample for the online questionnaires in the evaluation work plan:

- Step 1: The FCMCBSP M&E Support created a sampling frame of 344 stakeholders for which FCMCBSP had verified email addresses.
- Step 2: The evaluation team verified the contact emails and phone numbers of the 344 people and determined the usability of the email addresses and validation of the contact information for 276 of the 344 individuals on the original contact list.[26]

Data Collection: The Google Forms questionnaires were sent out to all 276 individuals with validated email addresses on January 15, 2020. Two reminders were sent to all non-respondents from January 19-23, 2020. In addition, the M&E Support made personal calls to some of the non-respondents and sent out reminders through the media's WhatsApp group to encourage responses. The analysis in this report is based on the 143 people (38 females and 105 males; 52 percent response rate) who responded to the questionnaires in the ten days they were live (Table 1; Annex IV, Table 13).

3.1.5. COMMUNITY-BASED FOCUS GROUP DISCUSSIONS

Regions and Districts: The evaluation team conducted face-to-face interviews in four of the eight districts in the coastal areas of the two regions of Ghana where the project was most active, including four of the eight districts that benefitted from FSMCBSP support for CBFMGs. The four CBFMGs visited

[23] For the purposes of the evaluation, the community-based interviews—which included 77 people—are listed as just one FGD even though the form was structured so different stakeholder groups (*e.g.*, female and male beneficiaries) were interviewed separately. If the number of community-based interviews are subtracted, there were 30 FGDs/KIIs with 117 people.
[24] The evaluation team did not get an accurate gender breakdown of all of the students interviewed in one village.
[25] Della E. McMillan, Lynn Hurtak, and Annie Dela Akanko. 2019. Work Plan Final Performance Evaluation of the Fisheries and Coastal Management Capacity Building Support Project. Accra, Ghana: METSS II for USAID/Ghana EG Office. December 3, 2019. Pp 19-20.
[26] Since the contact list was based on sign-up sheets, many email addresses and telephone numbers had changed.

were chosen from a matrix that classified them in terms of their level engagement with the project—two of the four were classified as "highly engaged" and two as "less engaged." The final choice of individuals chosen to participate in the FGDs and small KIIs was determined by the focal point at the targeted institution.

3.1.6. OTHER DATA SOURCES

Given the highly technical nature of FCMCBSP's five research studies and the FishCoMGhana online database (Activity 2.1.1-2.1.6), USAID/Ghana and the FCMCBSP Project Manager and M&E Coordinator recommended the evaluation team add a fourth member to the team during the final review of the work plan tasked with reviewing the technical quality and impact of these five activities. Since the most qualified individual who could be found to do this consultancy obtained his graduate degree through funding from USAID's SFMP and was applying for a job in DFAS, it was determined he would not be considered part of the core team but serve as a Technical Advisor. His draft report to the team (which is co-authored by the FCMCBSP Project Manager) is presented in Annex VI.

3.2. LIMITATIONS

There were several limitations to this evaluation.

- The principal methodological limitation was constructing a sampling frame for the online questionnaires since FCMCBSP did not have a stakeholder database and had to rely on old sign-up sheets from different events. To manage this limitation, the FCMCBSP Support worked with his colleagues to reconstruct a list of all individuals who benefitted from the different trainings in the principal stakeholder institutions. Once this sampling frame was constructed, the evaluation team was able to select a representative sample.
- Another limitation was the difficulty of attributing any result to FCMCBSP alone since some results were the effect of joint activities with SFMP and CSLP. To manage this risk, the project attempted to highlight the critical role both SFMP and CSLP played in providing financial and non-financial support to key activities and results.
- A third limitation was the field portion of the interviews coincided with UCC's winter break, which made it more difficult to interview the current students who had or were currently benefitting from the project and harder to track down the former students' current contact information because many were no longer using the same email addresses. To manage this risk, FCMCBSP: 1) launched a tracer survey of all current and former student beneficiaries and provided the results of this tracer survey to the evaluators; and 2) requested the FGDs at the four sister institutions include as many student beneficiaries as possible.

4.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

4.1. EVALUATION QUESTION 1: TO WHAT EXTENT HAS THE USAID/UCC FCMCBSP ACHIEVED ITS INTENDED GOAL AND OBJECTIVES AS DEFINED BY THE RESULTS FRAMEWORK?

4.1.1. FINDINGS

EQ 1.A: Has organizational and human capacity been strengthened as a result of improved infrastructure (KRA 1.1) and increased technical and scientific knowledge (KRA 1.2)?

The activities under PIR 1 (organizational and human capacity strengthened) were designed to build UCC's capacity for this type of leadership through investments in:[27]

- **Improved infrastructure (KRA 1.1)**, including: 1) renovating and equipping UCC's fisheries and coastal research laboratory; 2) refurbishing and equipping offices, lecture rooms, the DFAS/CCM computer room, and the CCM library; and 3) acquiring vehicles and other field equipment like research boats to support educational, training, research, and extension activities.
- **Academic and technical staff capacity strengthening (KRA 1.2)** by: 1) providing capacity-building grants and training for staff so they could update the UCC curricula and research programs; 2) facilitating the full operationalization of CCM; 3) increasing the number of post-graduate scholarships and field research awards to allow UCC to attract top students to support their research and extension activities; and 4) providing small grants to undergraduate students in DFAS and related departments to support final-year research and project work.

Since the impact of the KRA 1.1 and KRA 1.2 investments are completely intertwined, the evaluators based their assessment on: 1) the project's own internal data used to track the impact of these investments on the three principal organizational units being targeted for these investments—DFAS, CCM, and UCC as an institution; 2) the principal stakeholders' perceptions about how this investment affected the organizational capacity of these units and the human capacity of the staff, faculty, and students attached to these units; and 3) the key factors the principal stakeholders identified as having contributed to or detracted from the effective execution of the project.

DFAS: When FCMCBSP started, DFAS was threatened with extinction[28] due to low graduate and undergraduate enrollments (Annex V, Table 42). FCMCBSP support allowed DFAS to:

- Provide professors and students with functional office space, equipment (computers, research vehicles), laboratory, and library resources (subscriptions, physical space) needed to conduct quality research.
- Update the skills and training of eight senior faculty and two lab technicians responsible for the graduate student training and research programs (Annex V, Table 36).

[27] UCC. 2014. Detailed Program Description: Provision of Technical and Financial Support at the Department of Fisheries and Aquatic Sciences, University of Cape Coast. Cape Coast: DFAS for USAID/Ghana. July 2014. Pp. 12-14.
[28] The term "extinction" was used in an FGD with senior faculty to describe the very real threat that the department's faculty and courses would be absorbed into a different department. Since DFAS included some of the leading coastal and fisheries experts in the country, this would have been a huge national loss.

- Update and revise the training curricula by:
  - **Undergraduate**: 1) adding a new undergraduate course on climate change and coastal adaptation; 2) revising two existing undergraduate courses;[29] 3) ensuring each DFAS undergraduate received a small research grant ($500) enabling them to participate in one of the five assessments FCMCBSP funded under KRA 2.1 and collaborate with their professors on presentations, poster presentations, and research abstracts; and 4) pilot testing and scaling up the J-term exchange program of promising undergraduates with the University of Rhode Island (URI) (Annex V, Tables 37 and 40; Annex VI).
  - **Graduate**: 1) adding the program's first graduate course on climate change and coastal adaptation; 2) facilitating the technical updating and modularization of three of the department's most important graduate programs (*e.g.* majors) in collaboration with the Word Bank's Africa Centre of Excellence in Coastal Resistance (ACECoR) project;[30] 3) supporting the initial design of UCC's first dual-degree program with URI; 4) facilitating a massive increase in the number of graduate students from six in FY 2014 to 40 in FY 2020; and 5) fueling a massive increase in research by the faculty and students since they received support for field work as part of their partial and full scholarship support (Annex V, Tables 37 and 38; Annex VI).

This assistance galvanized a massive transformation remarked on by all UCC participants in the FGDs and KIIs (Annex IV. Tables C.1.1-C.1.2). Eighty-eight (88) percent of the 16 DFAS faculty who responded to the online questionnaire stated they agreed or strongly agreed that the organizational and human capacity of DFAS/CCM has been strengthened as a result of the improved infrastructure and capacity-building (Annex IV, Table 22). Ninety-five (95)-100 percent of the FCMCBSP PMB and staff who responded to the online questionnaire stated FCMCBSP activities increased: 1) grantsmanship and donor funding; 2) student enrollment; 3) the quality of the students enrolled; 4) student participation in other institutional activities; and 5) the quality and scope of research and the quality and quantity of publication (Annex IV, Table 17). Four of the best indicators of this successful capacity-building are: 1) the DFAS laboratory is widely regarded as the most state-of-the-art laboratory in the country and attracts work from major national research institutions and other universities (Annex V, Table 35); 2) the project's substantial over-achievement (860 percent) of its original target for *"scientific studies published or conference presentations given"* (Annex III, Indicator 19); 3) the increased prominence of senior DFAS faculty on international boards (Text Box 2); and 4) DFAS's state-of-the-art laboratory and growing reputation for quality training were critical in attracting new grants like ACECoR (Annex V, Table 51).[31]

[29] The National Accreditation Board requires all programs be revised every five years. Because of this, some courses have to be revised to meet new trends.

[30] Three existing postgraduate programs in DFAS were revised into modules to accommodate new concepts as well as to meet the requirements of ACECoR. Although most direct costs of the modularization process (*e.g.* workshop) were funded by ACECoR, the facilities and faculty networks (at UCC and the other four Ghanaian universities) that facilitated these revisions were developed under FCMCBSP.

[31] FGDs and review of some of the proposals and reports on these other grants. January 2020.

Text Box 2. Increased Prominence of DFSA Faculty on International Boards

In the last five years, CCM Director, FCMCBSP Project Manager, and DFAS Professor Denis W. Aheto has increased the number of national and international boards related to fisheries and coastal resource management that he serves on from zero to seven.

DFAS Chair and FCMCBSP M&E Coordinator Noble Asare has increased his membership on key national boards from zero to three.

Source: FCMCBSP Final Performance Evaluation. January 2020.

Four of the most frequently discussed challenges DFAS is likely to face in consolidating this successful capacity-building over the next year are: 1) accelerating the procurement of processes needed to complete the International Standards Organization (ISO) certification of the DFAS laboratory and a business plan for the laboratory; 2) securing additional funding for the initial pilot test of the URI-UCC dual-degree program;[32] 3) finding ways to mitigate the sharp increase in the faculty-student ratio and teaching load of the professors that has accompanied the dramatic increase in graduate enrollment due to FCMCBSP scholarships and the other donor programs FCMCBSP's success has attracted (Annex V, Table 39);[33] and 4) facilitating the 34 FCMCBSP students due to graduate by August 2020 translating this capacity-building into actual employment, which was an important sub-objective of the project and is currently only 31 percent of the original life of project target (Annex III, Indicator 21; Annex V, Table 41).[34]

CCM: Although CCM was officially approved by the UCC Academic Board in December 2013, it was not fully operationalized until FCMCBSP started in FY 2015 (Annex VII). With FCMCBSP support, CCM:

- Developed its current system of Board governance and strategic planning.
- Built its internal capacity to develop grant proposals and manage, monitor, and report on large grants.
- Built the capacity of UCC's top administration (through exchange visits, one-on-one trainings, and mentorships) to support large donor-funded grants like FCMCBSP.
- Developed stronger professional linkages to MoFAD, the NGO sector, its four sister university fisheries programs in Ghana, and the private sector.
- Developed linkages and interactions with international centers of excellence.

[32] Although ACECoR is providing partial support for the first group of DFAS students scheduled to pilot-test the program in the 2020-2021 academic year, this support will not cover all of the costs.

[33] One innovative way DFAS mitigated the impact of this issue was by facilitating senior professors at other Ghanaian and non-Ghanaian universities to serve on the student committees since FY 2015 (Annex V, Table 54). Many of these professors also served as consultants and/or were involved (through their students) in the five FCMCBSP-sponsored assessments under KRA 2.1 (Annex V, Table 49).

[34] At the time of the evaluation, only 11 of the 34 graduate students were on track to accept jobs, and three of these 11 were working in temporary positions. While it is possible a few of the best students will be hired for one or two of the post-doctoral positions created by ACECoR—which can pave the way to their eventually being hired as university faculty—this type of academic employment at UCC's DFAS and its four sister departments at other universities can absorb only a limited portion of students being trained. To date, neither DFAS nor CCM has the resources or time to develop a solid platform for helping students conduct job searches, access post-doctoral opportunities in Ghana or abroad, or develop the entrepreneurship skills needed to start or join consulting or advocacy businesses or NGOs. Until this is done, the quantity and quality of the students coming into DFAS will be scholarship driven. In 2019, when no scholarships were available, DFAS had only one M.Phil. application. In 2020, when CCM was able to advertise 45 scholarship positions (30 M.Phil. and 15 Ph.D.) the department had over 700 applications (FCMCBSP Final Performance Evaluation FGDs with faculty and students; verified with the FCMCBSP Project Manager and M&E Support.)

- Identified the need for, pilot tested, and scaled up a series of platforms for the successful outreach and extension needed to affect policy and capacity-building in the fisheries sector never before tried in Ghana or West Africa, including:
  - **Short-term trainings**: Developing, pilot testing, and scaling up a new model for high-quality, evidence-based short-term trainings in four areas critical to building the capacity of the government and private sector to promote sustainable fisheries and coastal management (Annex V, Table 46).
  - **National stakeholder conferences**: Successfully organizing Ghana's first two national stakeholder conferences on fisheries and coastal environment, as well as a series of workshops on key policy issues (Annex V, Tables 47 and 48).
  - **FishCoMGhana**: Pilot testing and scaling up a new model for an online database that provides frontline actors in the government and private sector with direct access to high-quality, evidence-based research on Ghana's fisheries and coastal management sector (Annex V, Tables 43, 44, and 45).
  - **National program for undergraduate research fellowships**: Pilot testing a new concept of providing research grants to undergraduate students in fisheries departments throughout Ghana, which is helping build the national profile of the discipline and its issues at the national level (Annex V, Table 40).
  - **A national journal and professional association**: Helping DFAS create Ghana's first national journal and professional association for the fisheries and coastal management sector—the Fisheries and Aquaculture Society of Ghana (FASoG) and the Journal of Fisheries and Coastal Management (JFCoM) (Annex V, Table 52).

Five years later, CCM is fully operational with two permanent research assistants and six temporary research assistants funded under FCMCBSP, which UCC plans to convert to permanent staff positions by May 1, 2020.[35] One of the most visible indicators of this increased organizational and human capacity has been the increase in the number of CCM partners from two in FY 2019 (USAID and URI) to six major partners—USAID, Danish International Development Agency [DANIDA], the World Bank, URI, Germany, and Norway—and four minor partners—the National Geographic Foundation, the French Embassy, Australian Aid, and the World Academy of Science (Annex V, Table 51). A second indicator is CCM's high score on the Africa Lead Organizational Capacity Assessment.[36] It is clear from the feedback the evaluators received from the FGD with senior UCC administration and CCM Board that the chief challenge CCM faces at this stage in its development is to avoid becoming "*a victim of its own success,*"[37] *i.e.* adjusting its financial and staff management structure to accommodate this rapid scale up in activities accompanying all of the new donor-funded activities attracted by FCMCBSP's success.

UCC: There was widespread agreement among most stakeholders that due to FCMCBSP's start-up investment—and early success in helping CCM and DFAS attract additional grants—UCC is now widely recognized as being the lead university-based center for fisheries and coastal management in Ghana and an emerging regional West African center for excellence as witnessed by its January 2019 receipt of the ACECoR project.[38] Eighty-six (86) percent of the 70 government officials who responded to the online

[35] Prior to the VC's announcement that UCC would fund these positions, there was real concern. Only 57 percent of FCMCBSP staff felt CCM had adequate staff to continue to support its activities (Annex IV, Table 17).
[36] By the third year of the project, CCM was already highly functional, as testified to by its score of 80 percent on the Africa Lead Organizational Capacity Assessment at the end of FY 2016. This capacity was reassessed just after the final performance evaluation field visits at 93 percent (Annex III, Indicator 16). (John Nene-Osom Azu and Isadore Nii Attoh Armah. 2020. USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. End of Project Organizational Capacity Assessment. Cape Coast: Proven Ag. Solutions. March 2020).
[37] This phrase was used repeatedly during FGDs with the FCMCBSP PMB and Project Manager.
[38] Ninety-six (96) percent of UCC faculty who were not FCMCBSP staff members or members of the PMB agreed the improved infrastructure and capacity-building facilitated by FCMCBSP strengthened UCC as a whole (Annex IV, Table 22).

questionnaire agreed FCMCBSP's capacity-building activities had achieved one of their important sub-objectives, to strengthen the Ministries' working relationship with the fisheries and coastal management experts at UCC (Annex IV, Table 19).

EQ 1.B: Have efforts to increase marine and coastal resource and resource assessments (KRA 2.1) and improved communication, extension and outreach (KRA 2.2) resulted in increased information and knowledge for natural resource management?

Increased marine and coastal research and resource assessments (KRA 2.1): When FCMCBSP was designed, it anticipated conducting five marine and coastal research and resource assessments in five areas MoFAD identified as critical to the fishing industry (Activity 2.1.1-2.1.5) and the development of an online database (Activity 2.1.6) to ensure the results were easily available to other national and international researchers as well as "*to government and other stakeholders on matters relating to biodiversity conservation and sustainable fisheries production*."[39] The evaluators based their assessment of EQ 1.b. on: 1) their review of the technical quality, results, dissemination strategy existing or projected policy impact of the studies by the evaluation team's Technical Advisor Evans Arizi (Annex VI); and 2) the stakeholders' rankings of the perceived utility and existing and projected policy importance of the studies in the online questionnaires and FGDs/KIIs.

The technical review confirmed project reports and feedback the team received through FGDs and KIIs, which indicate the five assessments were conducted with a high degree of scientific rigor that included:

- The involvement of three consultant teams from other universities recruited through a rigorous competitive process.
- Research support from 36 graduate and 80 undergraduate students from UCC and 72 undergraduates from other universities.
- High levels of supervision and quality oversight from the UCC faculty member in charge of each of the five studies, as well as the students' academic advisors (Annex VI). To ensure quality control, CCM required: 1) all graduates and undergraduates to be co-supervised by the UCC faculty member in charge of each of the five assessments as well as their academic advisor;[40] and 2) a DFAS-implemented mandatory weekly seminar during which students attached to each study reported on its interim results.

The technical review provided clear evidence (Table 2):

- The five assessments provided policy-significant results that informed or are likely to inform GoG's commercial fisheries policies; and
- The principal vehicle for sharing this information with policy makers and other researchers has been the FCMCBSP-facilitated FishCoMGhana database and two national policy conferences.

[39] UCC. 2014. Detailed Program Description: Provision of Technical and Financial Support at the Department of Fisheries and Aquatic Sciences, University of Cape Coast. Cape Coast: DFAS for USAID/Ghana. July 2014 . Pg. 14.
[40] For a full list of students, advisors, and all of the reports, dissertations, and theses related to the study, see Annex VI.

Table 2. Summary of Research Results of the FCMCBSP-funded Assessments, How the Results Were Shared, and Current Projected Significance for Policy and NRM

Study	# of Major Research Results and Location in Annex VI	Shared on the Web[41]	Shared at National Policy Conferences	Shared at Regional and Community Debriefings	Shared in the Journal	Current or Projected Significance for Policy and NRM
1. Fishery stock assessment	5 (Section 2.4)	Yes	Yes		No	Current[42]
2. Research and assessment of marine fisheries governance issues	10 (Section 3.4)	Yes	Yes	1 regional, 23 community debriefings	No	Current[43]
3. Research on fish and shellfish of commercial value	7 tilapia and catfish, 4 oyster production, and 1 clam production (Section 4.3)	Yes	Yes		No	Current[44]
4. Analysis of value chains of fish trade						
-Croaker fish value chain	5 (Section 5.3.1)	No	Yes		No	Projected[45]
-Fish transport and conservation	5 (Section 5.3.2)	No	Yes		No	Projected[46]
5. Monitoring biodiversity of coastal ecosystems	19 (Section 6.3)	Yes	Yes		Yes (2 articles)	Current[47]

Source: Annex VI.

Due to the DFAS-implemented mandatory weekly seminars, all UCC stakeholders (DFAS faculty, CCM staff, and graduate and undergraduate students) reported being familiar with the research methodologies and results of the major studies. Most other FCMCBSP stakeholder groups (NGOs; producer

[41] Ghanalinks.com and FishCoMGhana.org.

[42] The studies contributed important scientific information to the existing base of knowledge on the biology and population dynamics of some of the commercially important fish stocks in Ghana's marine waters. The same studies provided data that helped strengthen the government's resolve (and the private sector's willingness to accept) regular closed fishing seasons in order to reverse the declining trend of fish landings (Annex VI, Section 2.6).

[43] The findings contributed useful evidence on the need to strengthen fisheries management outcomes and place moratoriums on fishing activities in Ghana's marine waters during certain parts of the year to facilitate recovery of the marine fisheries of Ghana (Annex VI, Section 3.6).

[44] The results provide vital scientific information on how the West African mangrove oyster and black chin tilapia can be cultured on a large scale to enhance the aquaculture industry in Ghana. The findings have significant potential impacts on supplementary livelihoods in fishing communities, especially during lean or closed fishing seasons. (Annex VI, Section 4.5).

[45] This series of studies has significant potential for supporting the management of highly valued demersal fish stocks such as the croakers in Ghana.

[46] This series of studies has significant potential for supporting the management of highly valued demersal fish stocks such as the croakers in Ghana.

[47] The study contributes critical data to support GoG's recommendations that local communities stop using coastal water bodies as refuse dumping sites and highlight the need for GoG to create more stringent by-laws for conservation of coastal water bodies. (Annex VI. Section 6.5). These studies also provide baseline information needed to monitor various ecosystems in the face of ongoing and projected offshore oil and gas exploration and production in Ghana (Annex VI, Section 6.3).

organizations; MoFAD staff at national, regional, and local levels; and the national staff in the partner USAID projects SFMP and CSLP) were less familiar with the study results in large part because most of them never had any formal instruction on how to use FishCoMGhana.[48]

Two of the most important examples of where this information had a direct and measurable impact on important policy decisions were (Annex VI): 1) banning illegal fishing (known locally as *saiko* or bad fish) by industrial trawlers; and 2) enforcing the country's first successful one-month closed season in FY 2019.

The chief criticism of the five assessments is despite their scientific rigor, only two articles had been published in a refereed academic journal (FCMCBSP's JFCoM) by the time of the final evaluation. This—in the eyes of the PMB, DFAS faculty, and CCM staff interviewed in the FGDs, as well as the Evaluation Technical Advisor—is a tremendous missed opportunity that needs to be addressed in the next two years.[49] Since the majority of the graduate students are women, and publishing these articles is essential to them getting hired by UCC and other Ghanaian universities, this activity is critical to FCMCBSP achieving an increase in the number of female leaders in tenured leadership positions in the country's leading research and teaching institution working on fisheries and coastal resources management.[50]

Communication, extension, and outreach strengthened (KRA 2.2): Most stakeholder groups agreed or strongly agreed the creation and execution of these FCMCBSP communication, extension, and outreach platforms had "*strengthened the communication of extension and outreach of evidence-based research on marine and coastal management.*" There was, however, significant variation between the stakeholder groups in terms of which platform they considered to be most effective in building their personal capacity and skills (Annex IV, Tables 11 and 12).

Short-term trainings: A major achievement of the project—which was consistently ranked as one of the most effective activities in the FGDs and online questionnaires—was the development of training modules in four areas DFAS and CCM identified as top priorities of the Fisheries Commission and other key stakeholder actors. [51]

Media trainings and communication strategies: Another highly ranked activity was the project's communication strategy, which: 1) supported the costs of many journalists attending the two national conferences; 2) provided a media room with computers and good internet connection at each conference to help the journalists file their stories; 3) supported the costs of one radio company (ATL FM) providing live coverage at the national conferences; 4) facilitated (with per-diem) qualified journalists participating in one of the project's mainstream short-term trainings (Activities 2.2.1.-2.2.4) as well as two specialist journalist trainings;[52] and 5) backstopped journalists creating their own WhatsApp group (Coast to Coast), which connected them to one another and FCMCBSP.[53]

[48] FGDs with MoFAD staff. January 2020.

[49] To date, only two articles have been published in refereed journals using the results of the five research assessment projects, and there is a huge backlog of unanalyzed data, only part of which is likely to be presented in the student theses (Annex VI).

[50] At the time of the evaluation, there was only one tenured female professor in the five fisheries and coastal resources departments of the five universities where the evaluation team interviewed.

[51] These areas were: 1) integrated coastal management; 2) fisheries management; 3) climate change adaptation and mitigation; and 4) a basic and advanced Geographic Information System (GIS) course (Annex V, Tables 46 and 47). Sixty-four (64) of the 70 (91 percent) government respondents to the online questionnaire ranked the short-term trainings as the most effective FCMCBSP activity (Annex IV, Table 20).

[52] Project records show 70 journalists from 21 outlets have been trained in one of the project's two journalist trainings and/or mainstream short-term trainings. Some journalists attended multiple events; some only one.

[53] One hundred (100) percent of the 17 media specialists responding to the online questionnaire agreed FCMCBSP's four-pronged media strategy (training, networking, UCC backup, Coast to Coast) resulted in increased sharing of information and

Two national policy conferences: The two FCMCBSP-supported national policy conferences, which were attended by 274 people in 2017 and 262 people in 2019 from all the major stakeholder groups, were consistently ranked by all stakeholders as the most effective outreach activities and one most stakeholders strongly agreed had "*built the capacity of the staff and members of your organization*" (Annex IV, Table 11).[54] The genius of the FCMCBSP policy conference model was it created a user-friendly (*a.k.a*. government-sponsored) forum for all principal stakeholders in the sector to discuss evidence-based research and its public policy implications.

The Journal and Society: Based on enthusiastic feedback from the first FCMCBSP-sponsored policy conference in 2017, a group of faculty from the five major Ghanaian universities announced their intention to fast-forward the creation of the country's first national Journal and Society focused on fisheries and costal issues to strengthen the exchange of policy-relevant research among key national actors and principal international actors such as the World Bank, African Union, and European and U.S.-based universities.[55] Although All UCC stakeholders strongly agreed JFCoM and FASoG were "*effective methods of information sharing*,"[56] only a small number of the stakeholders had actually joined FASoG and/or read or contributed to JFCoM. Two groups with the highest levels of FASoG membership were UCC (22 percent) and the media (40 percent) (Annex IV, Tables 21, 24, 28, and 31).

Social media and websites: Most stakeholder FGDs ranked the DFAS Facebook page (which had 1,141 likes in January 2020) as important (Annex IV, Tables 11 and 12), and noted the CCM website is an important window to the project any outsider could go to for information about its activities or to apply for a short-term training or conference. Respondents agreed future programs should make it easier to find online application materials for the conferences and short-term trainings.

Based on feedback from the FGDs and online questionnaires, it appears each of these platforms, targeting different stakeholders, is expected to be continued and scaled up after FCMCBSP ends. The chief criticism of the platforms in the KIIs and FGDs was, while it was easy to track the impact of the trainings on personal capacity of the staff who participated in FCMCBSP-sponsored trainings, workshops, and conferences, it was not always clear if and how this training contributed to the organizational capacity of the institution as a whole since there was often little FCMCBSP follow-up to facilitate the training being cascaded to other people in the organization. This accounts for most non-UCC respondents to the online questionnaires ranking the impact of the project on their personal capacity much higher than the impact on their institution. [57]

EQ 1.C: Has the implementation of community-based activities resulted in increased opportunities for improved natural resource management and/or income-generation activities amongst the rural families, and has it impacted the target communities?

In addition to its communication and outreach activities, FCMCBSP pilot tested two different models for building UCC's capacity to backstop community-based extension for coastal management and fisheries initiatives. The first focused on engaging school clubs in four communities for joint monitoring of the

knowledge for NRM to the public in Ghana, and 94 percent agreed it increased the quality of their media outlet's reporting and the number of stories they produced on related topics (Annex IV, Tables 29, 30, and 31).

[54] All 65 respondents to the online questionnaires in stakeholder groups 1, 2, 3.A, 5.B, and 6 who attended either or both conferences stated they agreed the biannual conference gave participants a forum to share knowledge and concerns; 88 percent stated the conference encouraged the government to implement policies that promote sustainable fisheries and coastal management; and 98 percent agreed the conference increased information and knowledge for NRM (Annex IV, Table 16).

[55] Since their co-founding in 2018, FASoG has held two meetings and JFCoM has published one issue (Annex V, Tables 52 and 53).

[56] One hundred twenty-three (123) of the 140 online questionnaire respondents in stakeholder groups 1,2,3.A., 5.B, and 6 agreed JFCoM contributes important information and knowledge for NRM (Annex IV, Table 16).

[57] The average rankings for individual impact were consistently higher across all stakeholder groups. The one exception to this was UCC faculty in DFAS (Annex IV, Table 24)

ecological health of the communities' wetlands (with UCC researchers and two NGOs working in the sector, Hen Mpoano and Friends of the Nation). The second focused on capacity strengthening for governance and livelihoods security in eight coastal communities (later reduced to four). The evaluators based their assessment on answering two questions: 1) have these activities built the capacity of the local CBOs (schools, CBFMGs) and partner NGOs (Hen Mpoano and Friends of the Nation) to improve their advocacy, their ability to seek answers, and engage positively with local authorities in the governance of fisheries and coastal resources; and 2) have these activities enabled the CBOs and partner NGOs to become a conduit for communicating and extending important information to local communities.

To collect the data needed to answer these questions the evaluation team conducted: 1) community-based interviews with multiple groups of actors at four sites; as well as 2) FGDs and KIIs with the consultants and NGO staff who supported these programs.

The wetlands ecological and health monitoring using school clubs and communities (Activities 2.27-2.28): Based on multiple FGDs at two of the four sites where the FCMCBSP model of promoting wetlands ecological monitoring through schools was tested, the evaluators concluded the activity: 1) was a very effective conduit for communicating and extending important information to local communities; and 2) contributed (directly and indirectly) to the development of new, more wetland-friendly income-generating activities (IGAs) for the local people and attracted other donor-funded projects and GoG resources to help communities support the scale up of these new, less-destructive IGAs.

Promoting supplementary livelihoods in coastal communities (Activity 2.2.9): In contrast to the wetlands monitoring program, the FCMCBSP livelihoods activities were plagued with difficulties from the start. To date, none of the four communities developed a profitable IGA from the pilots, which were terminated in the third year due to lack of funding. The same contracting mechanism made it difficult to ascertain what, if any, benefits accrued to the local communities through the project's investment in capacity strengthening of the eight original groups in the first and second year. Based on project records, it does not appear there is any direct or indirect evidence the livelihood activities had a lasting impact on the communities' capacity to advocate or engage positively with local authorities in the governance of fisheries and coastal communities. The chief exception to this was Anlo Beach, where stakeholders argued frequent visits to their community by UCC and junior high students, journalists, and staff—most of which were unrelated to FCMCBSP's livelihood activities support—gave them courage to lobby local authorities for help on relocation and developing new activities. All of these problems, which were verified in two field visits, are clearly spelled out in FCMCBSP's internal final assessment of the livelihood activities.[58]

Impact of FCMCBSP on the two executing NGOs: All NGO staff interviewed in FGDs strongly agreed or agreed their organizational and human capacity had been strengthened as a result of their collaboration with FCMCBSP (Annex IV, Table 11). They reported this impact was the result of their: 1) collaboration with the project on the design and execution of the wetlands ecological health monitoring pilot program (Activity 2.2.7); 2) participation in the FCMCBSP research study designed to monitor the NRM impact of that pilot program (Activity 2.1.5); and 3) participation in the FCMCBSP-sponsored short-term trainings and conferences. For Hen Mpoano, this capacity-building was strengthened because it was also a partner of the USAID-sponsored SFMP, which gave it access to additional funds and support that complemented FCMCBSP's investments and encouraged a more broad-based participation of its staff in FCMCBSP communication extension and outreach activities.

[58] Joshua Adotey. 2019. USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Internal Evaluation of Activity 2.2.9. Promoting Supplementary Livelihoods in Coastal Communities. Cape Coast: CCM. (September 2019).

Key Factors That Effected Project Efficiency, Efficacy, and Results: The eight most frequently noted factors project staff felt had a negative impact on the project's achievement of its intended goal and objectives as defined by the results framework were:[59]

- The contract language for the government-to-government (G2G) grant, which did not allow for any direct institutional support to UCC through overhead nor for the project to buy back staff time, since this was considered counterpart funding.
- The original budget in the approved grant was made in dollars but the project was paid in cedis, so the actual amount of money dispersed to the project was less than originally budgeted since the project was often forced to purchase equipment in dollars, which required the reconversion of the cedis back to dollars.
- UCC's cumbersome procurement, accounting, and development office procedures were the source of major delays in getting equipment and starting many activities on time.
- The UCC development office, which is charged with managing the physical refurbishment of offices and labs, had very little experience in managing grants activities and created a host of bottlenecks executing grants.
- The high rates of turnover in the university accountant positions (four times over the life of the project) necessitated constant retraining.
- A one-year delay in the receipt of project funds from USAID in early 2017 (FY 2016), which caused many FCMCBSP activities to be eliminated or delayed.
- The national hiring freeze on government employment, which delayed the process needed to transform the FCMCBSP temporary staff positions into permanent CCM positions.
- Project leaders did not understand the importance of having a well thought out M&E and communication strategy from the start or how this could complicate (and undervalue) the project's ability to track its impact and results.

Five of the most frequently cited factors facilitating the project's effectiveness, efficiency, and results were:

- The project's strong committed leadership from its Manager, M&E Coordinator, and Board.
- The well-trained project staff.
- The project's strong collaboration with URI, which was nurtured through two other USAID-funded projects (ICFG and SFMP), helped create and maintain a series of synergistic relationships that increased the effectiveness, efficiency, and impact of all three projects.
- USAID/Ghana's willingness for the project to pilot test a large number of innovative new sub-activities and platforms not in the original proposals.
- The active support of UCC administration, which included: 1) transforming the position of the CCM Coordinator into a directorship; 2) providing in-kind support for electricity, water, and space; 3) providing the salaries for all of the professors and the two senior laboratory managers; 4) agreeing to create and fund two permanent research fellow positions for CCM; 5) providing a $100,000 no-interest loan facility to the project in FY 2016 when USAID/Ghana experienced a delay in receiving its funding from Washington; and 6) agreeing to convert the six temporary staff positions in CCM (which were scheduled to end March 30, 2020)[60] into permanent research fellow positions (despite a nation-wide hiring freeze) starting May 1, 2020.[61]

[59] FGDs and online questionnaire responses (Annex IV, Table 17, Questions 14, 15, 20, and 22).
[60] These are currently classified as research assistants.
[61] The VC's verbal commitment to the FCMCBSP Project Manager was reiterated to the evaluators during their exit interview.

4.1.2. CONCLUSIONS

EQ 1.A: FCMCBSP support for infrastructure (like improved laboratories and equipment) helped strengthened the organizational and human capacity of DFAS in ways that are attracting additional human and infrastructural investment to DFAS, CCM, and UCC at large. FCMCBSP also increased the technical and scientific capacity of UCC in ways that have attracted the international and internal support it needs to sustain and scale up this success.

Although FCMCBSP has not completed sustainability plans for most of its activities, there is a strong commitment by staff to maintaining and scaling up most of the activities and platforms created—even those not being supported by ACECoR—now that the UCC VC has assured CCM the six FCMCBSP staff positions will become permanent. Three cross-cutting challenges the project will need to confront in conjunction with its phase-out planning include:

- **Challenge #1**: Developing a draft one-year transition action plan for CCM management capable of managing the massive increase in activities accompanying the new projects FCMCBSP attracted.
- **Challenge #2**: Accelerating the procurement processes needed to complete the installation of the laboratory and ISO certification.
- **Challenge #3**: Addressing four outstanding issues needed to consolidate FCMCBSP's results:
  - **Challenge #3.A**. Fully funding the initial pilot test of the URI-UCC dual-degree program.
  - **Challenge #3.B**. Increasing publication on the five FCMCBSP research projects.
  - **Challenge #3.C**. Assisting the 34 FCMCBSP students finding the types of permanent employment in the sector expected from the FCMCBSP-funded scholarships.
  - **Challenge #3.D**. Mitigating the impact of the sharp increase in the faculty-student ratio on training and research quality.

EQ 1.B: FCMCBSP's support for the five research assessments led by some of Ghana's leading fisheries experts dramatically increased the supply of high-quality information and knowledge on Ghana's most pressing fisheries and coastal management issues. To date, however, there is a huge backlog in the analysis and write up of the information collected by the consultants, graduate students, and undergraduate students who worked on these assessments. There is also no solid plan for deciding if and how these studies (and databases) will be used to inform and monitor future policies for fisheries and coastal management.

FCMCBSP also developed a series of communication and extension platforms (FishCoMGhana, short-term trainings, national conferences, JFCoM and FASoG, social media sites, and media capacity-building and support) that are increasing the principal stakeholders' in the fisheries sector's access to information and knowledge about NRM, as well as its use in policy discussions and decisions. Despite the project's innovative use of these mechanisms to target different stakeholder groups, it was very hard to show the wider institutional impact of this increased information on most of the project's principal government and non-government partners since this information was not being tracked by the FCMCBSP M&E system.

EQ 1.C: The unsuccessful execution of FCMCBSP's support for livelihood activities using a series of short-term consultant contracts backstopped by technical experts from UCC and other sources highlights the need for CCM to develop an alternative model to achieve its official mandate for community-level outreach and extension.

FCMCBSP's successful co-execution of a new model for promoting ecological monitoring of wetlands with two junior high schools: 1) is an example of best practice that should be scaled up as an afterschool activity through the national education system to other coastal communities; and 2) highlights the critical

importance of DFAS and CCM strengthening their future collaboration with NGOs for grassroots community capacity-building and extension to promote more sustainable fisheries and coastal resource management.

4.1.3. RECOMMENDATIONS

Short-term Closeout

The most immediate short-term challenge the project faces is determining how it will reconfigure the old FCMCBSP staff positions and management model into a new model that can manage its responsibilities under ACECoR, as well as those not supported by the new project.

Recommendation 1.1.[62] Closeout planning processes: Expand the focus of FCMCBSP's closeout processes to include two outside facilitators, one appointed by the UCC VC as his personal representative and one from outside UCC.

- **Recommendation 1.1.a. New staffing and management plan**: Identify and define the position descriptions of the ten most critical CCM staff identified for the next phase, including: 1) general administration/office management; 2) M&E; 3) extension and communication; 4) partner coordination; 5) online data resources; 6) gender; 7) health, safety, and risk management; 8) trainings, workshops, and conferences; 9) donor coordination; and 10) research.
- **Recommendation 1.1.b. Bridge transition year strategic plan**: Develop a draft program plan for all activities and funded projects during this transition year identifying how the project plans to address key issues identified in the final evaluation (*i.e.,* the first year FCMCBSP ends [April 30, 2020-March 30, 2021]).
- **Recommendation 1.1.c. Administrative procedure review and action plan**:
  - **Recommendation 1.1.c.i. Rules and regulations**: Review principal lessons learned from FCMCBSP regarding UCC rules and regulations concerning procurement, accounting, and the development office.
  - **Recommendation 1.1.c.ii. Procedures**: Develop a joint action plan to pilot test new ways of streamlining these procedures.
  - **Recommendation 1.1.c.iii. Visits and assistance**: Facilitate this process by promoting exchange visits and technical assistance.

Recommendation 1.2. DFAS laboratory:

- **Recommendation 1.2.a. ISO accreditation and manual**: Ensure the DFAS consultant charged with completing the ISO accreditation and developing a laboratory user and safety manual finishes before FCMCBSP closes.
- **Recommendation 1.2.b. Equipment procurement**: Speed up procurement to get the missing parts the DFAS consultant needs to get the Atomic Absorption Spectroscopy (AAS) and Gas Chromatography (GC) equipment in the laboratory fully installed before FCMCBSP closes.

[62] The recommendations are numbered as follows:
- All recommendations in the 1.x sequence are for closeout/transition activities (March 2020);
- All recommendations in the 2.x sequence are for most pressing bridge-funding institutional issues for the coming year (April 1, 2020-March 30, 2021); and
- All recommendations in the 3.x sequence are for important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021).

Most pressing bridge-funding institutional issues for the coming year (April 1, 2020-March 30, 2021)

Four areas were identified where there is a pressing need for additional USAID support to complete certain activities critical to building the new institutional framework DFAS and CCM need to link the FCMCBSP achievements to their new, more expanded donor portfolio.

Recommendation 2.1. UCC-URI dual-degree program: (slated to start August 2020) Consider providing the complementary support DFAS needs to assist the ten Ph.D. students scheduled to start the dual-degree program in August 2020 to buy UCC-URI extra time to tap other donors and internal resources for future funding.

Recommendation 2.2. DFAS writing workshops: Consider supplementing support for and scaling up of the writing workshop UCC is already planning to encourage the consultants and graduate students who participated in the studies—as well as any faculty who backstopped them in the past or is willing to in the future—to complete drafts and submit them to refereed journals for publication. Since the majority of the graduate students are women and publishing these articles is essential to them getting hired by UCC and the other Ghanaian universities, this activity will strengthen FCMCBSP's long-term gender impact.

Recommendation 2.3. CCM and DFAS job fair support: Consider assisting DFAS and CCM to develop better models for helping their graduate students get jobs and/or the post-doctoral opportunities or internships likely to lead to jobs. This is an activity that could be managed by a retired professor from UCC or another university who is well known to prospective employers. This professor could: 1) conduct a quick-start employment and networking opportunities analysis for the fisheries and coastal management sector in Ghana; 2) use this information to develop a series of virtual and in-person job fair presentations by prospective public-sector employers or agencies offering post-docs; and 3) coach FCMCBSP-funded graduates to become more entrepreneurial and consistent in their job searches and interviewing skills. If this pilot is successful in getting students jobs over the next year, CCM and DFAS could consider institutionalizing this type of career counseling into mainstream DFAS programs.

Recommendation 2.4. DFAS senior fellows program: Help DFAS pilot test two options for reducing the steep faculty-student ratio that is one of the negative unintended consequences of the sharp increase in graduate student funding since FY 2015 (Annex V, Table 39). These options include:

- **Recommendation 2.4.a. Sabbaticals**: Pilot test a senior fellows program at DFAS and CCM to provide top ups for senior faculty from other Ghanaian and regional universities to supplement their sabbatical pay in return for agreeing to mentor, supervise, chair, and/or co-chair student thesis committees, and possibly even teach some critical courses.
- **Recommendation 2.4.b. Fulbright fellows**: Ask USAID to fast-forward a UCC request for two Fulbright teaching positions in DFAS for the 2020-21 academic year that could possibly be renewed for the next five years.

Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021)

Although conditions for sustaining many of the platforms need to be ironed out over the next year, only one—CCM's mandate for extension—needs to be completely rethought based on lessons learned from the FCMCBSP pilot tests.

Recommendation 3.1. New CCM extension programs (FY 2020-future):

- **Recommendation 3.1.a. Community-based activities**: Consider shifting the focus of CCM's extension mandate away from direct execution of community-based activities toward backstopping successful NGO and government-led initiatives at the community level.
- **Recommendation 3.1.b. Scale up opportunities**: Consider examining ways its highly successful community-based wetlands monitoring program (which is linked to one of the DFAS-supervised research programs) could be scaled up through another donor-funded project.
- **Recommendation 3.1.c. Monitoring**: Consider ways the M&E of CCM's community-based activities could be strengthened by involving more UCC faculty and students from social science departments.

4.2. EVALATION QUESTION 2: WHAT UNINTENDED OUTCOMES HAVE THE USAID/UCC FCMCBSP'S CAPACITY STRENGTHENING ACTIVITIES ACHIEVED RELEVANT TO IMPROVING SUSTAINABLE MANAGEMENT OF GHANA'S MARINE AND COASTAL RESOURCES?

4.2.1. FINDINGS

The evaluators based their assessment on: 1) the different stakeholders' responses to the online questionnaires, FGDs, and KIIs; 2) a review of the original approved project plan in order to verify the outcomes were indeed unintended.[63] This comparative analysis showed although most of the 22 activities envisioned for achieving the four project outputs (KRAs 1.1- 2.2, Text Box 1) were in the proposal, the means for achieving some of the most critical project results were not. Some key unexpected means or outcomes—which had a dramatic impact on the effectiveness and the efficacy of FCMCBSP—include: the national conferences, JFCoM, FASoG, undergraduate research fellowships, joint grooming of graduate students, dual-degree programs with URI, and the media training initiative (Table 3). Many of these unexpected outcomes are helping institutionalize some of the most critical mechanisms FCMCBSP stakeholders reported they are using and are likely to continue to use to build and maintain their personal networks with other experts in the field. Three key factors the stakeholders interviewed in the FGDs and KIIs identified as increasing FCMCBSP's willingness and ability to identify, pilot test, and scale up these positive unexpected outcomes were: 1) the faculty, staff, and administrators' exchange visits to URI; 2) SFMP's complementary financial support; and 3) USAID/Ghana's flexibility with adjusting the budget and annual work plans (Table 3; Annex V, Table 34).

[63] UCC. 2014. Detailed Program Description: Provision of Technical and Financial Support at the Department of Fisheries and Aquatic Sciences, University of Cape Coast. Cape Coast: DFAS for USAID/Ghana. July 2014.

Table 3. FCMCBSP's Unexpected Outcomes and Their Link to Collaboration with USAID-funded SFMP and URI

Unexpected Outcomes Not in Original Proposal	Impact on Sustainable Networking	Collaboration with USAID-funded SFMP and URI on Exchange Visits	Collaboration with USAID-funded SFMP and URI on Co-funding	Collaboration with USAID-funded SFMP and URI on In-kind Support	M&E System Tracked Key Outputs/ Outcomes of This Activity
Creation of the first biannual national conference on fisheries and coastal environment	Yes	Yes	Yes	Yes	No[64]
Creation of Ghana's JFCoM	Yes			Yes	No[65]
Establishment of FASoG	Yes				No
Scale up of the undergraduate research grants to five Ghanaian university-based DFAS programs	Yes				No[66]
Establishment of the first wet laboratory (to complement the DFAS laboratory the grant envisioned)	Yes				No[67]
The Media training and Coast to Coast WhatsApp network[68]	Yes				No

[64] Although 100 percent of the 65 respondents to the online questionnaires who reported attending either/both biannual conferences stated the conferences gave participants a forum to share knowledge and concerns, and 98 percent stated the conferences increased information and knowledge for NRM, the M&E system never developed a system of follow-up tracking to see if and how this information was encouraging the government to implement policies that promoted sustainable fisheries and coastal management, or what types of additional support might be needed to ensure this (Annex IV, Table 16).

[65] Although 88 percent of the 140 respondents to the online questionnaires identified JFCoM as an extremely useful mechanism for facilitating exchange between national and international partners, this impact is not being tracked, which also makes it difficult to determine what types of support these activities might need in order to scale them up (Annex IV, Table 16).

[66] Efforts to retroactively collect information on how participation in the undergraduate program affected students' decisions about careers and graduate study through a tracer study in preparation for the final evaluation were successful in reaching only 20 of the former students because of students changing their contact information without telling the department (Annex V, Table 40).

[67] To date, no system has been set up to track the cost/benefits of FCMCBSP and other donor investment in laboratories that could be used to inform the development of a sustainable laboratory business plan.

[68] Although several journalists forwarded articles they wrote to the project to be posted on the CCM website, this clearly represented only a tiny fraction of the actual articles produced. The lack of an efficient system for tracking this wider impact was a missed opportunity. Two unintended consequences of creating Coast to Coast were: 1) it made it easier for FCMCBSP to alert journalists to new communication platforms (*e.g.* FishCoMGhana, JFCoM, and FASoG); and 2) it strengthened CCM's

Unexpected Outcomes Not in Original Proposal	Impact on Sustainable Networking	Collaboration with USAID-funded SFMP and URI on Exchange Visits	Collaboration with USAID-funded SFMP and URI on Co-funding	Collaboration with USAID-funded SFMP and URI on In-kind Support	M&E System Tracked Key Outputs/ Outcomes of This Activity
Joint academic programs with URI: - J-term - Co-grooming one-month exchange programs - Dual-degree program	Yes	Yes	Yes	Yes	No[69]

Source: Annex V, Table 50; Annex VII; and personal communication with FCMCBSP Project Manager Denis Aheto, and URI Senior Coastal Resources Manager Brian Crawford, February 26, 2020.

Unfortunately, due to the way the M&E system was set up and managed during the first three years, it is hard to determine the wider impact of some of these highly successful unexpected outcomes on either:

- **PIR 1**: The project's impact on the organizational and human capacity of FCMCBSPs key university and non-university-based partners; or
- **PIR 2**: Increased information and knowledge for NRM.

4.2.2. CONCLUSIONS

FCMCBSP identified, pilot-tested, and scaled up a number of new platforms that strengthened its principal results and the networking between key-sector actors crucial to sustaining these results once project funding ends. Unfortunately, it is hard to track the wider impact of many of these activities because the M&E system did not: 1) keep very accurate records on any information except the required indicators in the PITT during the first three years; or 2) anticipate the need for a stakeholder database that would enable the project to track which individuals they had worked with in specific institutions.

awareness of emerging coastal management disasters (like major storms) in ways that allowed them to improve their response time. One vivid example was when a regionally based journalist alerted the group to how fierce storms in May-July 2017 were accelerating one community's rate of coastal erosion. This event was then fully documented by a FCMCBSP drone within 24 hours, helping to accelerate the government's emergency team response.

[69] Although the URI collaboration with UCC is widely regarded as an example of best practice, neither FCMCBSP nor the evaluation team was able to develop a system for tracking this collaboration or the cost/benefits accrued to each partner from the collaboration even though there were many. In conjunction with the final evaluation, the evaluators asked SFMP to develop a table that described how its Intermediate Results (IRs) and activities were strengthened by their collaboration with FCMCBSP as a model for this type of tracking (Annex V, Table 50).

4.2.3. RECOMMENDATIONS

Important Bridge Institutional Activities for the Coming Year (April 1, 2020 - March 30, 2021)

Recommendation 3.2. New CCM M&E Strategy (FY 2020-future):

- **Recommendation 3.2.a. Full-time M&E officer**: Future CCM-managed projects should anticipate the need for a qualified full-time M&E officer from the start, and make sure all staff and CCM M&E officers are trained in the M&E regulations of specific projects from the start.
- **Recommendation 3.2.b. Internal indicators**: If any new project activities are added that are not tracked by the indicators in the M&E plan, develop a set of internal indicators that can track both participation and impact.

4.3. EVALUATION QUESTION 3: TO WHAT EXTENT HAS USAID/UCC FCMCBSP COLLABORATED WITH OTHER USAID-FUNDED PROJECTS SUCH AS THE CSLP, SFMP, AND GOG PARTNERS, SUCH AS THE MOFAD, OTHER DONOR PROJECTS, AND THE PRIVATE SECTOR TO ACHIEVE THE OVERALL PURPOSE OF STRENGTHENING CAPACITY FOR SUSTAINABLE FISHERIES AND COASTAL RESOURCES MANAGEMENT?

4.3.1. FINDINGS

Literature Review: There is clear evidence from project records, reports, and indicators in the PITT[70] that FCMCBSP collaborated with a wide range of non-UCC stakeholder groups in the execution of its key activities as was anticipated in the original project proposal and results framework (Table 4). One major achievement of FCMCBSP—which was not envisioned in the original proposal—was the addition of the other four Ghanaian universities working on fisheries and coastal management as key institutional partners by ensuring some of the lead current and retired faculty and students at these four institutions benefitted either directly or indirectly from many aspects of the project (Table 4).

[70] Indicators 7, 8, 9, and 10 track the number of people trained; Indicator 11 tracks the number of food security private enterprises, CBOs, and NGOs the project is collaborating with (180 percent of target); and Indicator 22 tracks the number of civil society organizations (CSOs) and government agencies strengthened (120 percent of target) in the FCMCBSP PITT (Annex III).

Table 4. FCMCBSP Collaboration with Principal Stakeholders

Activities	Govt	Non-UCC Academic	Other Projects	Civil Society Organizations (CSOs)/NGOs	Producer Groups	Media
1.1.1-1.1.3. UCC infrastructure	X	X				
1.2.1. UCC faculty/staff capacity-building			SFMP			
1.2.2. Operationalization of CCM			SFMP			
1.2.3. Post-graduate training support		X	SFMP	X	X	
1.2.4. Undergraduate research grants		X				
1.2.4.b. Undergraduate internships				X		
2.1.1.-2.1.4. Research assessments		X			X	
2.1.5. Monitor coastal ecosystems		X	SFMP & CSLP	X		
2.1.6. FishCoMGhana	X	X				X
2.2.1-2.1.4. Short-term trainings	X	X	SFMP & CSLP	X	X	X
2.2.5. Policy engagement						
-Conferences	X	X	SFMP & CSLP	X	X	X
-Journal	X	X				X
-Society	X	X				
2.2.6. Partnerships	X	X	SFMP & CSLP	X	X	X
2.2.7. Wetlands monitoring	X			X		
2.2.8-2.2.9. Livelihoods				X		

Source: FCMCBSP Final Performance Evaluation online questionnaires, FGDs, KIIs, and literature review.

FGDs/KIIs and Online Questionnaires: The majority of the stakeholder respondents to the online questionnaires and FGDs agreed (Table 5):

- FCMCBSP's collaboration with a wide range of partners helped *"strengthen the global capacity for sustainable fisheries and coastal resources management in Ghana;"*[71]
- FCMCBSP created a series of platforms to facilitate collaboration between itself and these partners that strengthened UCC's collaboration with these different groups and their collaboration with one another;
- Their collaboration with FCMCBSP built the capacity of their personal technical and scientific knowledge and networks in ways they continue to use;
- This increased capacity has in many cases increased the quality of their agency's fisheries and coastal management support; and

[71] Twelve (12) of the 14 FGDs (86 percent) that ranked this capacity agreed (Annex IV, Table 11).

- This increased capacity strengthened the partner organization's core capacity for sustainable fisheries and coastal resources management.[72]

Table 5. Respondents Who Agreed with Statements About the Extent to Which FCMCBSP's Capacity Strengthening Activities Built Their Personal Capacity and the Organizational Capacity of Their Institutions on FCMCBSP's Government, NGO, and Media Partners in the FCMCBSP Final Evaluation

Evaluation Questions	Government (especially MoFAD)	NGOs	Media
	N=70	N=9	N=17
FCMCBSP has improved my personal knowledge	96%	100%	94%
I expect to continue to use the skills and networks I acquired as result of FCMCBSP in the future	100%	100%	100%
The colleagues from my ministry/agency who participated have used that information to build the capacity of other colleagues	80%	67%	71%
FCMCBSP's capacity-building activities have increased the quality of my media outlet ministry/agency's support to fisheries and coastal management issues	80%	100%	94%

Source: Annex IV, Tables 19, 26, and 29. FCMCBSP Final Evaluation online questionnaires. January 2020.

Two of the most widely cited examples of best practices in institutional collaboration were FCMCBSP's partnerships with MoFAD and USAID-funded SFMP (Text Box 3; Table 4).[73]

Text Box 3. Examples of Best Practice of FCMCBSP's Collaboration with Two Key Partners—MoFAD and SFMP

Partnership with MoFAD: From the start, the FCMCBSP Project Manager and M&E Coordinator made a conscious effort to facilitate the MoFAD Director's participation in the project's annual strategic planning. They also gave the MoFAD Director a leadership role in the design and execution of the two conferences and the write up and validation of the conference communiqués. Based on the results of the FCMCBSP-sponsored baseline research and assessment of marine fisheries governance issues (Activity 2.1.2), FCMCBSP focused on building the technical capacity of MoFAD's district and zonal staff to provide informed input and data to support improved NRM and coastal management decisions through short-term trainings and conference participation.[74]

Partnership with SFMP: Many MoFAD, Fisheries Commission, and private stakeholders cited the collaboration between SFMP and FCMCBSP as so strong it was often hard to see where one project started and the other one ended.[75] This collaboration was facilitated by the earlier collaboration USAID nurtured through ICFG (2011-2015) and further strengthened by SFMP's commitment to devoting between 5-10 percent of its budget to support joint activities with UCC (Annex V, Table 50).[76]

Source: FCMCBSP Final Evaluation FGDs and Online Questionnaires. January 2020.

[72] About half of the UCC respondents to the online questionnaire felt the one group they had not worked with sufficiently were the *"international NGOs working on coastal resource management in Ghana"* (Annex IV, Table 17, Question 33).
[73] Annex IV, Table 17, Question 33.
[74] Based on the initial governance study, FCMCBSP decided to concentrate its short-term training of government staff—especially staff associated with the Fisheries Commission—at the district and zonal levels.
[75] In many cases the evaluators had to explain SFMP and FCMCBSP were not the same project since many stakeholders thought they were given their high levels of collaboration on most activities.
[76] Some key outputs of this collaboration, which strengthened the impact of the project on sustainable fisheries and coastal resources management, were: 1) a series of exchange visits and capacity-building exchanges that opened the eyes of the faculty, administration, and some sector actors to new ideas about teaching, curriculum, extension, and outreach; 2) URI's mentorship

Unfortunately, it is very difficult to track the impact of these collaborative activities or their broader organizational impact of these collaborations—even those with SFMP and MoFAD (Text Box 3)—because: 1) the project never created a beneficiary stakeholder database for specific institutions; and 2) there was no focused strategy for ongoing communication with the project's key focal points in each stakeholder group.[77] The same lack of structured communication made it difficult for CCM staff to know what type of follow-up training or technical assistance might be needed, and seems to have reduced the extent to which the individuals who got the training were willing and/or able to cascade that training to their colleagues (Table 5).

4.3.2. CONCLUSION

Most stakeholders felt FCMCBSP's broad-based collaboration with a representative sample of the sector's most critical institutional and project partners has strengthened their personal capacity and that this capacity-building is contributing to NRM in Ghana. To date, however, it is hard to show a solid link between these capacity-building efforts and the types of institutional capacity-building the project was designed to facilitate because it never developed a beneficiary database or focused communication strategy to facilitate communication, capacity-building, and coordination with key partners.

4.3.3. RECOMMENDATIONS

Important Bridge Institutional Activities for the Coming Year (April 1, 2020-March 30, 2021)

Recommendation 3.3. New communication and extension strategy (FY 2020-future):

- **Recommendation 3.3.a. Beneficiary database**: Over the next year, the CCM Communications and Extension Officer needs to collaborate with the CCM Database Lead on the development of a new CCM communication and extension strategy to: 1) identify the principal CCM partners under FCMCBSP and their current priorities for the next phase of capacity-building with CCM; and 2) develop and use a beneficiary stakeholder database to track CCM's progress toward the achievement of this capacity-building and extension strategy. This new strategy should:
  - Start with a policy decision from the PMB and CCM Director about which FCMCBSP partners will be included.
  - Solicit input from other projects (like the former Africa Lead Project in Ghana) about how the beneficiary database should be designed and what privacy safeguards need to be put in place.
  - Collaborate with the CCM Database Lead on the development of a separate beneficiary database for each institution to track these individuals, protect their privacy, and generate email lists for announcements.
  - Identify and confirm (by one-on-one discussions with the individual and their supervisor/s) two appropriate focal points (one female and one male) in each of the identified partner groups.

of CCM as an institution—both during its initial conception and its scale up; as well as 3) some of FCMCBSP's most innovative teaching and extension and platforms it plans to scale up and continue such as the UCC-URI J-term, joint grooming of graduate students and dual-degree programs with URI, JFCoM and FASoG, undergraduate research fellowships, and conferences.

[77] Although the project made a concerted effort to ensure all key stakeholder groups were informed about the different platforms, most of this information—especially the information about the short-term trainings, the invitations to the conferences and workshops, and the way information was transmitted through a letter of invitation or announcement—went to the project's principal contact person. Since many MoFAD supervisors were new, they would typically transmit the letter to the next level supervisor under them, and sometimes key national, regional, and district people who were working with FCMCBSP or one of the other USAID-funded projects would not be invited to a key event like a specialized training or conference.

- Consider conducting personal visits (via Skype or Zoom if not face-to-face) to each focal person to get to know them and inventory the most relevant staff positions (and staff currently in these positions) and their contact information, taking into account the group selected is representative of the partners' staff working on NRM and coastal resources management and includes a representative number of women as well as men (ideally 50 percent).
- Enter the feedback from the interviews and two-way communication with the focal person into the database.
- Continue to track all participation of partner staff in the database.
- Conduct an annual review of the database to ensure its accuracy.

Recommendation 3.4. New CCM short-term training strategy (FY 2020-future): Over the next year, the Training Lead will develop the new fee-based system for managing and updating the five FCMCBSP short-term trainings (Activities 2.2.1-2.2.4, Text Box 1). These activities should:

- **Recommendation 3.4.a. Organizational set up**: Have a consultant from a qualified institution that has set up similar types of university-based fee-based training systems advise CCM how to set up training, marketing, monitoring, and billing systems.
- **Recommendation 3.4.b. Cascade training**: Consider adding an extra day of Training of Trainers (ToT) training to each of the five core short-term training modules to facilitate the trainees conducting cascade trainings for their colleagues.
- **Recommendation 3.4.c. Database**: Ensure future programs consider recording unique identifiers that can be entered into the new communication and extension database for future tracking and networking. This system will also help UCC's future projects avoid double counting when compiling the number of people trained, which most donor-funded projects require.

4.4. EVALUATION QUESTION 4: TO WHAT EXTENT HAS THE PROJECT ADDRESSED THE GENDER ISSUES RELATED TO CAPACITY-BUILDING AMONG THE DIFFERENT GROUPS OF BENEFICIARIES AND WHAT HAS THE IMPACT BEEN?

4.4.1. FINDINGS

There was no mention of gender or any targets for gender in the original project plan USAID/Ghana approved for FCMCBSP.[78] As part of its agreement with USAID/Ghana, FCMCBSP was required to conduct a gender mainstreaming plan *"to ensure gender issues are addressed in the implementation of FCMCBSP within the first year."*[79] This exercise, which was completed in April 2015, included a complete review of project documents, a survey completed by 25 key informants, two FGDs with staff and students, and several in-depth interviews with selected staff. Based on the information collected, the consultant hired to conduct the gender audit exercise facilitated a full-day workshop during which 26

[78] UCC. 2014. Detailed Program Description: Provision of Technical and Financial Support at the Department of Fisheries and Aquatic Sciences, University of Cape Coast. Cape Coast: DFAS for USAID/Ghana. July 2014 .

[79] The gender audit was conducted with reference to the Toolkit for Mainstreaming Gender in Higher Education in Africa developed by the Association for the Development of Education in Africa (Working Group on Higher Education). The tool identifies key institutional domains for mainstreaming gender (*e.g.* policies and strategies, human resource development and management, curriculum, research methods, support programs, student access and retention, gender violence and sexual harassment, gender-disaggregated data, and resource mobilization for gender equity), which became the focus areas for DFAS's gender audit. This framework was complemented with aspects of the Moser Gender Framework in order to analyze the extent to which the gender roles and needs were considered in the project planning processes, as well as the USAID Gender Mainstreaming Tool Kit. (UCC. 2015. USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Gender Audit Report and Mainstreaming Action Plan. Cape Coast: UCC for USAID/Ghana [April 2015]. Pg. 10).

participants reached agreement on a list of conclusions in four areas (institutional arrangement and development, program development project performance measurement, M&E, and gender analyses of implementing agencies) and identified 52 recommendations to address these issues.

The evaluators based their assessment of EQ 4 on: 1) the extent to which some of the main issues identified in the 2015 gender audit and mainstreaming plan were addressed by FCMCBSP; and 2) the different stakeholders' perspective on gender integration and what FCMCBSP has achieved based on the feedback from the online questionnaires and FGDs.

Early Evidence of Results in the Four Areas Targeted by the Gender Mainstreaming Plan

Key Areas of Progress: Based on this comparison, it is clear FCMCBSP made measurable progress in addressing many of the key issues identified by the 2015 gender mainstreaming plan, specifically:

1. ***Institutional arrangement and development***: Set targets for and achieved an affirmative action plan for gender parity in the full operationalization of CCM (KRA 1.2) that resulted in 50 percent of the 12 UCC staff and 61 percent of the eight attached CCM senior staff being female by the end of the project (March 30, 2020).
2. ***Program development***:
   PIR 1: Organizational and human capacity strengthened:
   - Set an affirmative action target for FCMCBSP-funded scholarships and research that resulted in the majority of FCMCBSP-supported graduate students who completed the DFAS post-graduate program being female (61 percent of M.Phil. students; 75 percent of Ph.D. students).
   - Supported UCC's existing policies designed to prevent gender discrimination and sexual harassment, as well as accommodations to facilitate pregnant students being able to continue their classroom and field work, which contributed to high rates of female post-graduate student retention (100 percent of FCMCBSP-funded post-graduate students).
   - Co-developed (with ACECoR) a new course unit on "Gender Issues in Fisheries" that is now a core course requirement for all DFAS post-graduate students.
   - Set targets and encouraged a recruitment process that led to 30-36 percent of the 154 fellowships awarded to undergraduate students at UCC and its four sister institutions being awarded to female students in fisheries and coastal management programs.

   PIR 2: Increased information and knowledge for natural resource management:
   - Provided financial support (through FCMCBSP undergraduate research grants and the post-graduate fellowships) that ensured a high percentage of the graduate students (61 percent) and undergraduate students (30 percent) who participated in the assessments were female. This resulted in 75 percent of the Ph.D. theses, 50 percent of the M.Phil. theses, and 30 percent of the undergraduate reports being written by women.
   - Helped rebrand the concept of fisheries and coastal management research and employment as a male-dominated sphere by: 1) encouraging and facilitating 43 student presentations on research results (70 percent by women) at the 2017 and 2019 policy conferences; and 2) ensuring most FCMCBSP-funded dissertations and many student undergraduate reports are posted on FishCoMGhana, which has a wide national and international audience (Annex V, Tables 43, 44, and 45).
   - Set strict gender targets for all community-based activities and required all consultants and NGOs charged with executing these activities to monitor and report on these targets, which led to the active engagement of women in all community-based activities and workshops (51 percent of the 360 community-based workshop participants) verified in the evaluators' FGDs with these groups (Annex V, Table 47).

3. ***Project performance measurement, monitoring, and evaluation***: Used disaggregated data for setting gender targets and reporting on most of its trainings and scholarship-supported activities.
4. ***Gender analyses of implementing agencies***:
   PMB: Based on recommendations from the gender mainstreaming plan, added another senior UCC official to the PMB and tried to build its members' understanding of gender issues and their relevance to the project.
   Program implementation team: Increased the number and status of women on the PITT (see above) and ensured the team was well trained in the UCC human resources guidance on gender and able to mainstream that guidance and the targets for gender into their programs even though UCC never authorized the request to have a full-time gender focal point.

Areas Where the Project Was Less Successful:

Ensuring equitable participation of women in UCC partner organizations (NGOs, local, regional and national agencies): In order to ensure the project achieved its broader goal of building the capacity of key government and NGO partners in fisheries and coastal management, the gender mainstreaming plan recommended FCMCBSP develop a *"communications strategy with gender considerations"*[80] that: 1) guided media and publication activities of the project; 2) ensured men and women were equally represented and actively participated in activities; and 3) ensured due consideration be given to times, venues, and other roles of men and women that limited their participation in project activities.

Unfortunately, FCMCBSP never developed this type of gender sensitive communication strategy. Instead, most invitations to short-term trainings were sent to regional government directors or the head of the NGO or producer group—who tended to be men and often had little or no familiarity with the project—and the invitations did not set targets for female participation. One of the unintended results of this informal method for distributing the invitations—which was confirmed by almost all FGDs and KIIs with government, NGOs, and producer groups—skewed attendance toward males. Records show only 30 percent of the 357 people who participated in FCMCBSP-sponsored short-term trainings were women (Annex V, Table 46). One of the most vivid illustrations of this is although about half of MoFAD's senior technical staff and 30 percent of its junior staff were women, only 23 percent of MoFAD's district-level staff short-term training and conference participants were women. [81]

Ensuring equitable participation of women in the UCC partner organizations (NGOs, local, regional and national agencies): Many of the same invitation issues that skewed enrollment in short-term trainings also skewed attendance in the biannual conferences, where only 23 percent of the registered attendees in FY 2017 and 29 percent of the attendees in FY 2019 were women (Annex V, Table 48). Some MoFAD and Ghana Inshore Trawlers Association (GITA) staff interviewed noted that although many of the conference topics focused on processing, storage, and market issues directly relevant to women (who tend to dominate the commercialization of fish), there was little emphasis on the wider issues like low education levels and weak access to credit and extension likely to impede the rapid scale up of these new promising technologies in Ghana.

Community-based activities: Most FGD participants agreed with the project data that showed although FCMCBSP was successful in ensuring women were targeted by the community-level activities,

[80] UCC. 2015. USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Gender Audit Report and Mainstreaming Action Plan. Cape Coast: UCC for USAID/Ghana [April 2015]. Pg 31).

[81] MoFAD project data and MoFAD 2017 annual report. Della E. McMillan, Lynn Hurtak, and Annie Dela Akanko. 2019. Evaluation Work Plan: Final Performance Evaluation of FCMCBSP. Accra: METSS II Project. Annex V.

they were only successful in building women's access to more sustainable livelihoods in the two communities affected by the wetlands monitoring with schools programs (Section 4.1.2).

Feedback from the Online Questionnaire: In general, the results for the 21 FCMCBSP staff and board members (Stakeholder Group 1) and 23 other UCC faculty who participated in the program (Stakeholder Group 3.A) showed (Annex IV, Tables 17 and 22):

- Ninety-six (96)-100 percent of the 44 UCC respondents agreed FCMCBSP *"effectively addressed the gender issues related to the capacity-building of students at UCC,"* with 75 percent strongly agreeing; and
- Ninety (90)-91 percent agreed FCMCBSP addressed the gender issues related to capacity-building in sustainable fisheries and coastal resource management.

The 21 Stakeholder 1 respondents accorded lower rankings to other areas (Annex IV, Table 17):

- Only 67 percent agreed the project *"effectively addressed the gender issues related to the capacity-building of the faculty;"*
- Only 57 percent agreed the project effectively addressed the capacity-building of the regional, district, and zonal offices of the principal ministries;[82] and
- Seventy-one (71)-86 percent stated the project effectively addressed the gender issues in its two community-based initiatives.

When asked to compare the consideration of gender in FCMCBSP's outreach activities, 96 percent of the 24 DFAS faculty respondents felt the project adequately addressed the gender issues related to the conference, versus 78 percent for the short-term training participants (Annex IV, Table 22).

4.4.2. CONCLUSIONS

The fact that USAID required FCMCBSP to organize a rigorous gender audit as the basis of its gender mainstreaming plan in the sixth month of the project helped it better target some of the most critical issues related to gender for its different beneficiary groups since neither the approved project proposal nor the original strategic plan had addressed any of these issues.

The same analysis highlights FCMCBSP's effectiveness in achieving measurable results in each of the four areas targeted by the gender mainstreaming plan, even though the original project budget did not include any provisions for a gender focal point or special funds that could be used for some of the key activities recommended by the plan like gender training and gender modules.

There is also abundant evidence from the online questionnaires, FGDs, and KIIs that the strategy was successful in addressing the gender issues related to capacity-building of the UCC students and undergraduate students who participated in the short-term research grants at UCC and its four sister university programs, but less successful in dealing with the principal gender constraints associated with the faculty and staff affiliated with the projects' principal government, producer group, and university partners. Although the program was very attentive to encouraging the active participation of women in the community-based activities, these activities were only successful in building women's access to IGAs and improved NRM management practices in one of the two pilot initiatives (the wetlands management project with public schools).

Two of the best indicators of the successful impact of the 2015 gender mainstreaming plan on UCC's commitment to addressing the gender issues related to capacity-building among the different groups of

[82] The 24 Stakeholder Group 3 respondents.

beneficiaries are: 1) the prominent role gender plays in the new grants the two programs have attracted; and 2) many of the recommendations identified in the original gender mainstreaming plan are being continued and scaled up after the project's end with support from some of the grants.

4.4.3. RECOMMENDATIONS

Important Bridge Institutional Activities for the Coming Year (April 1, 2020-March 30, 2021)

Recommendation 3.3. New CCM communication and extension strategy (FY 2020-future) (as recommended in the 2015 gender mainstreaming plan):

- **Recommendation 3.3.b. New procedure for issuing invitations to sponsored events (FY 2020-future)**:
  - **Recommendation 3.3.b.i. Invitations**: Ensure all invitations to sponsored events (*i.e.,* events where the cost of the individual participating is being subsidized by a donor) take into account the wider context of capacity-building goals CCM has established in its new communication and extension strategy.
  - **Recommendation 3.3.b.ii. Gender targeting**: When open-ended invitations are issued to an institution, ensure they indicate a quota for female participants.
  - **Recommendation 3.3.b.iii. Stakeholder beneficiary database**: Ensure any individual who participates in a sponsored or non-sponsored event is entered into the database.

Recommendation 3.5. New CCM gender and youth development strategy (FY 2020-future) (as recommended in the 2015 gender mainstreaming plan):

- **Recommendation 3.5.a. Gender Lead**: Appoint a gender platform leader and ensure this person is appropriately trained and linked to other faculty and centers working on gender issues at UCC and its four sister universities to confirm appropriate focus and tracking of gender in all CCM and DFAS activities.
- **Recommendation 3.5.b. Social science collaboration**: Strengthen CCM's involvement with social scientists and gender specialists working on gender issues in the fisheries sector in UCC and other public, private, and donor institutions in Ghana.
- **Recommendation 3.5.c. Collaboration with CCM Communication and Extension Lead**: Work closely with the CCM Communication and Extension Lead to identify opportunities to support successful initiatives already working on gender issues in the fisheries sector by posting information about them on FishCoMGhana, or having them give a presentation at a workshop or the biannual conference.

4.5. EVALUATION QUESTION 5: TO WHAT EXTENT ARE THE USAID/UCC FCMCBSP CAPACITY STRENGTHENING INTERVENTIONS LIKELY TO CONTINUE AFTER UNITED STATES GOVERNMENT (USG) SUPPORT ENDS.

4.5.1. FINDINGS

EQ 5.A: Is stakeholder buy-in likely to continue or be increased after the current project expires?

The original approved FCMCBSP proposal did not anticipate the need for FCMCBSP to develop a sustainability plan for any of its investments. There was, however, an implicit understanding that the program's results would be mainstreamed into core DFAS and CCM projects. For this reason the

consultants have based their assessment on the feedback from the FGDs, KIIs, and online questionnaires about: 1) the current level of buy-in from different stakeholders for different categories of activities designed to achieve each KRA (in the sense that stakeholders express their interest in continuing an activity after the project closes); and 2) whether this activity is likely to be sustainable in the medium and longer term within the current and projected context of support for DFAS and CCM at UCC.

The responses to the online questionnaires, FGDs, and KIIs highlight the extremely high levels of buy-in from a wide cross-section of stakeholders who expect to continue to use the skills and knowledge acquired from these activities. At the same time, there was a cross-cutting concern in the questionnaire responses and FGDs that conditions for sustaining many activities and platforms are not established (Table 6).

Table 6. Level of Stakeholder Buy-in by Category for Key FCMCBSP Activities, the Likelihood These Activities Can Be Sustained Over the Short and Medium Term,[83] and Key Challenges for Sustainability

Level of Activity	Stakeholder Buy-in	Short Term (1-5 Yrs)	Medium Term (6-10 Yrs)	Key Challenges for Sustainability
Infrastructure				
Laboratory	Strong country and regional demand for the laboratory and supported by ACECoR	Yes	Likely	*Business Plan/Procedures*: No business plan to ensure systematic billing and cost recovery from GoG, private sector, and donor-funded projects
Library, vehicles, research equipment	Strong UCC demand for the library, vehicles, and research equipment to support other grant and non-grant-funded activities of students and faculty	Likely	Likely	*Procedures/Overhead:* Very small percentage of overhead on student scholarships (like from ACECoR) returns to department in ways that can be used to renew equipment or support *Procedures/Health and Safety Plan*: Although DFAS developed a health and safety plan for the laboratory, there is a need to revise this plan to adequately protect UCC and its students and to scale it up to other infrastructure
DFAS				
DFAS faculty capacity	Strong support from UCC and strong demand for faculty expertise in Ghana and regionally	Yes (from UCC)	Yes (from UCC)	*Procedures/Faculty Incentives/Promotion and Tenure Requirements:* Limited recognition needs to be given to building individual faculty members' capacity for grantsmanship and recognizing grantsmanship in tenure and promotion decisions in order to reduce faculty dependence on large donor-funded grants for research
DFAS post-graduate training program	Sharp increase in post-graduate student numbers dependent on scholarships due to lack of a clear path to employment	Yes (from ACECoR)	Likely	*Curriculum:* DFAS needs to strengthen the post-graduate employment track of the M.Phil. and Ph.D. graduates in ways that will attract qualified donor-funded and self-funded applicants to the program (this was addressed in the design of ACECoR, which increases the chance it may be institutionalized into the curriculum)
Undergraduate training program	Low enrollment despite FCMCBSP investments in curriculum and	No (enrollments down)	No unless branding changed	*Procedures/Branding/Communication Strategy:* Most UCC-based stakeholders attributed this anomaly to poor branding of the major and employment prospects (a

[83] Yes: permanent funding or follow-on grant funding from another project assured; Likely: strong commitment to sustaining the activity but not assured by independent budget or support; No: not likely to be sustained without additional support from another donor-funded grant.

Level of Activity	Stakeholder Buy-in	Short Term (1-5 Yrs)	Medium Term (6-10 Yrs)	Key Challenges for Sustainability
	research grants and strong employment market[84]			similar observation was made in the 2015 FCMCBSP gender audit and gender mainstreaming plan)
CCM				
Senior staff positions		Yes (from UCC)	Yes (from UCC)	
Office functioning and programs		Likely (grant dependent)	Likely but grant dependent	*New Grants/Overhead/Business Plan:* CCM depends on grants for most of its operating budget *Donor Coordination*: No inter-donor coordination
Five research assessments and FishCoMGhana	Strong demand for research by national, regional, and international agencies Strong integration of students into post-graduate and undergraduate programs is key to quality of training programs UCC faculty and some faculty at other Ghanaian universities depend on the studies for tenure and promotion	Likely	Likely	*Business Plan/Branding:* Conditions (and costs and processes) for continual updating of databases not in place. Plan exists but not yet operationalized *Procedure/Communication Strategy*: Unclear role of FishCoMGhana at the national level in relation to the other fisheries and coastal management departments and the general public (issue flagged by 2015 gender mainstreaming plan)
Short-term trainings	Strong national demand for the short-term trainings and donor interest	Likely	Likely	*Business Plan/Donor Coordination*: Draft business plan for offering fee-based trainings developed but not adopted
Biennial policy conference	Very strong national demand for conference and donor interest by all stakeholders	Likely	Likely	*Business Plan/Donor Coordination*: No business plan for sustaining it despite high levels of donor interest and support
JFCoM and FASoG	Strong interest from UCC and media but less well known to other stakeholder groups	Likely	Likely	*Procedures/Communication Strategy:* No structured publicity to encourage use by a wider range of stakeholders *Business Plan:* No business plan
Joint partnerships/ programs with URI (under-graduate J-term, dual degree program for Ph.D. students)	Strong demand for these programs	Likely	Likely	*Business Plan/Donor Coordination:* Largely dependent on grants; no plan for long-term sustainability of the program despite high levels of donor interest

[84] Tracer study shows almost 100 percent of undergraduates find employment in the field at a rate higher than most other UCC departments.

Level of Activity	Stakeholder Buy-in	Short Term (1-5 Yrs)	Medium Term (6-10 Yrs)	Key Challenges for Sustainability
Community -based Activities				
Wetlands ecological monitoring using school clubs and communities	Strong demand from the schools, NGOs, and communities and strong support from UCC for a linkage with the Ministry of Education	Likely schools can continue activities at low level without support	Additional scale will require co-support from Ministry of Education and grants	*Strategic Planning Donor Coordination*: Strong support from Ministry but not yet part of formal curriculum and dependent on outside donor support
Promoting supplementary livelihoods in coastal communities	No strong demand and no model to scale up	No	No	None of the pilots were successful

Source: FCMCBSP Mid-term Evaluation FGDs, KIIs, and responses to online questionnaires. January 2020.

PIR 1: Organizational and Human Capacity Strengthened

Infrastructure*:* Although the short-term sustainability of the laboratory is assured because it is being covered by other grants, neither DFAS nor CCM has developed a business plan for how the current infrastructure base will be invoiced to new projects so there is a rotating fund that can be used for routine maintenance and renewal.

DFAS: Although the short-term (1-5 years) sustainability of DFSA faculty resources are assured by the department, the sharp increase in student scholarships for post-graduate enrollments means the five senior DFAS faculty had to supervise 30 graduate students in 2018 and 83 in the 2019-2020 academic year (34 FCMCBSP funded students; 43 ACECoR-funded; and six self-funded). Although FCMCBSP students will graduate in August, the ratio will continue to be a problem for the next four years as DFAS and CCM grapple with supporting the 120 new ACECoR-funded graduate students. In the short term, DFAS does not want to hire additional senior faculty to correct the situation because it would block opportunities for younger faculty and young Ph.D. students to grow into positions.

Although the short-term sustainability of FCMCBSP building DFAS's post-graduate programs is guaranteed, this sustainability is still driven by scholarships. In 2018-19 when there were no new scholarships, the department had only one new application. In 2019 when DFAS offered 75 new scholarships, there were 700 applicants. Any long-term solution to this issue will require CCM and DFAS to strengthen the post-graduate employment track of the new graduates in ways that will attract new applicants to the program. To address this issue, ACECoR is requiring the 120 students it supports to have mandatory one-year paid internships with a business, NGO, international donor, university government office, or prospective employer.

CCM*:* Now that the issue of future staffing has been resolved by UCC's agreement to pay for the staff out of core funds, the chief short-term challenges to sustaining FCMCBSP's substantial investment in CCM are: 1) many of its core activities and platforms are dependent on grant funding; 2) CCM has never developed a business plan for determining how it will invoice new grants for the use of its equipment and services; and 3) UCC has not established a formula for returning some of the overhead charged to the teaching grants to the CCM.

PIR 2: Increased Information and Knowledge for Natural Resource Management

Assessments: In the short-term (1-5 years), the prospects for maintaining and scaling up FCMCBSP studies are assured since: 1) ACECoR is committed to sustaining all of five research studies started under USAID—and is adding two more[85]—by providing research grants to all Ph.D. and M.Phil.-level students; and 2) UCC is already funding two permanent research fellow positions to lead the research platform activities.[86]

FishCoMGhana: Although ACECoR is not supporting the regular updating or scale-up of FishCoMGhana, the short-term prospects for sustaining this are somewhat assured because: 1) the VC confirmed the six permanent staff positions, one of which is scheduled to focus on database management; and 2) the database is already functioning. The prospects for scaling up and improving the database are also very good since FCMCBSP funded the development of a plan for upgrades, installing the necessary security features needed to control access and providing real-time, more user-friendly

[85] The two new research studies introduced under ACECoR are: 1) a blue economic and social resilience study, which introduces marine governance, trade, and businesses around the ocean and how these will impact livelihoods co-executed by the Department of Economics and DFAS; and 2) a marine metrology research study co-executed the Physics Department and DFAS.

[86] FGD with senior DFAS faculty and board members confirmed with document review.

information to stakeholders on relevant events in order to ensure local communities and media have accurate information. To date, however there is no donor support for this plan.

Short-term trainings: Although the UCC administration and CCM consider the short-term trainings a critical platform, CCM never finalized the draft plan developed by a consultant in June 2017 for sustaining them. Although ACECoR is not continuing the trainings, this major constraint could easily be solved by focusing one of the six CCM staff on the short-term trainings and having one of the existing centers of excellence for university-based short-term trainings mentor CCM on how to develop a business plan for fee-based trainings.

Conferences*:* Another critical platform without a sustainability plan is the biannual conference. Although at least one international donor has expressed initial interest in funding the 2021 conference, nothing is certain. It is clear CCM needs to develop a more sustainable business model that can facilitate co-funding from CCM and DFAS's growing number of major and minor donors in order to avoid being dependent on any one donor.

JFCoM and FASoG*:* Although CCM is committed to facilitating the continued operation and scale up of JFCoM and FASoG, it has not developed a plan for how these activities will be continued after USAID funding ends. Once these business plans are developed, CCM can identify what, if any, gaps in support might need to be covered by one of its eight existing and prospective large donors. Even though the prospects for sustaining and scaling up these activities are not guaranteed, most senior administrators and board members interviewed in the FGDs stated their chances are extremely good.

Institutional partnerships with URI*:* Two important joint programs FCMCBSP helped co-facilitate with the SFMP—the undergraduate J-term and the dual-degree for Ph.D. students—were successfully pilot tested under FCMCBSP and greatly appreciated by UCC faculty, students, and top administrators both because of their educational impact and as an example of best practice in collaboration, which UCC would like to scale up to other U.S. and European universities. Although the dual-enrollment project was conceptualized and approved by the executive boards of both universities under FCMCBSP, the initial pilot test of the dual-degree program is not fully funded. Although ACECoR is providing partial funding for the initial testing of the model, it is insufficient to cover the 15 UCC students eligible to go URI in August 2020.

Community-based activities*:* The field visits confirmed the point made by UCC and NGO stakeholders that there is strong stakeholder buy-in[87] from students, teachers, community leaders, and UCC staff and senior administration to scale up the wetlands monitoring program successfully pilot tested by FCMCBSP. For this scale-up to occur, however, CCM will need a separate grant since ACECoR can only support additional student research.

EQ 5.B: What are the lessons learned and best practices, and from which stakeholder or beneficiaries, in achieving results?

BEST PRACTICE

Based on FGDs, KIIs, and online questionnaire responses, the evaluation team identified eight examples of best practice:[88]

- FCMCBSP's biannual national conference on fisheries and coastal management.[89]

[87] See EQ 4 discussion in Section 4.4 of this report.
[88] For a list of reasons some stakeholders gave for their identification of these activities as best practice, see Annex V, Table 33.
[89] This activity included many sub-elements of best practice highlighted in the FGDs and online questionnaires. These include the way FCMCBSP: 1) involved the MoFAD Director directly in the planning and chairmanship of the workshop; 2) allowed

- The five marine and coastal research and resource assessments, which included baseline studies and technical input from highly qualified national consultants with complementary studies by the UCC DFAS graduate and undergraduate students with solid quality control and technical oversight from the senior DFAS faculty.[90]
- FCMCBSP's use of its new system of DFAS undergraduate research fellowships to build a concrete linkage with its four sister DFAS departments that complemented the other ties developed through the research consultancies, JFCoM, FASoG, and conferences.
- The UCC-URI dual-degree program being pilot tested with DFAS before scaling up to at least two other UCC schools (pharmacy and business).
- The wetlands ecological monitoring project with junior high school students.[91]
- FCMCBSP's decision to build GITA's capacity through collaborative research, exchange visits to URI, and sponsoring some of their members' participation in the short-term trainings, which had huge payoffs in terms of convincing the trawlers to support MoFAD's announcement of Ghana's first closed season.
- The short-term professional training of DFAS staff, which helped catalyze a number of critical curriculum changes and motivate professors to participate in the program even though they were not compensated for the grant activities they supported on top of their already heavy teaching loads.
- FCMCBSP's four-pronged media strategy, which all stakeholders agreed dramatically increased media coverage of fisheries and coastal resources management issues in Ghana over the last five years.[92]

LESSONS LEARNED

In addition to the best practices identified in the FGDs/KIIs and online questionnaires, the evaluators identified a number of important lessons learned for future USAID and UCC programs:

- **Lesson A. Design**: Future university-based capacity-building initiatives need to anticipate the impact of successful activities on: 1) faculty-student teaching and supervision ratios; as well as 2) office/lecture and computer space, and help programs build the systems need to accommodate these effects both during and after the grant.

stakeholder groups to present in their local languages (and provided translators); 3) equipped a media room to facilitate real-time reporting to the country at large; 4) published of a book of abstracts that permitted all of the stakeholders to choose which presentations to attend; 5) co-financed with SFMP; and 6) facilitated high levels of conference participants' involvement in the preparation and approval of a communiqué summarizing the principal policy recommendations that came out of the conference, which was distributed to MoFAD for review before final adoption and then disseminated through the FCMCBSP Facebook page, direct postings on the journalists' Coast to Coast, and direct emails to other important stakeholder groups.

[90] Both groups of UCC students interviewed in the FGDs identified the weekly seminars as another example of best practice that helped them stay on track with their theses and build linkages to the new faculty and research fellows who could help them with data analysis and write up.

[91] Most stakeholders familiar with the livelihoods activities (*e.g.*, the UCC staff and students and administration; the current and former SFMP and CSLP staff, and NGO staff) strongly agreed this community-based model was an example of best practice and should be scaled up to all of the coastal district schools in Ghana (Annex IV, Tables 17 and 26). The former Assistant Director of CSLP reported he attempted to scale up the model to 20 high schools in coastal areas but only reached four due to early termination of funding. The NGO Friends of the Nation reported it also pilot tested a scale up of the model in one beachfront community near an oil-producing area.

[92] All the media experts interviewed in the media FDG identified the first media workshop in May 2017 (which involved 20 media specialists from 15 media outlets) as a sub-best practice under this larger area of best practice. The media experts were invited to a five-day field tour and received on-site training on effective reporting on fisheries and coastal resources management issues in the local communities in all four of Ghana's principal coastal regions, which included ample time for them to interview and interact with the local coastal people and an internet-equipped bus (staffed with the two consultants leading the study as well as other visiting experts from UCC) that permitted them to file stories between site visits. In addition to a flurry of print, radio, and television stories produced both during and after this initial training, they created their own WhatsApp group (Coast to Coast), which connected them to one another and FCMCBSP.

- **Lesson B. Donor supervision**: USAID needs to organize capacity-building for projects to help them better understand grant management.
- **Lesson C. Exchange visits**: Exchange visits to other centers of excellence in the first and second year of a new project can help jumpstart capacity-building in key areas where it is linked to a larger program/set of programs by helping the faculty identify new initiatives to pilot test and scale up. The relationship between this project and UCC nurtured under ICFG and SFMP is a clear example of this principle.
- **Lesson D. Faculty incentives**: Future capacity-building programs need to anticipate ways of compensating faculty and permanent staff (through salary top ups or buying back time) for their activities related to the grant that comply with both university and USAID rules and regulations.
- **Lesson E. Workforce development and gender equity**: For the full impact of USG investment in scholarships to train graduate students—female graduate students, in particular—in emerging fields like fisheries and coastal resources management to have a lasting impact, it must be linked to activities that help them produce their first publications and transition into the workforce positions they need to occupy to bring about lasting change.
- **Lesson F. Sustainability plans**: Future projects need to anticipate, support, and track (as part of the M&E system) key processes needed to sustain USG investments after a project ends from the start so these plans can become fully operational while the project still has money and before the improved infrastructure and capacity attracts other projects that may want to capitalize on this baseline USG investment.
- **Lesson G. Bridge institutional support**: Donors should anticipate the need for a certain amount of bridge institutional support to consolidate key capacities of a successful university-based program if there is clear evidence the capacities the initial project helped create are being actively scaled up and expanded.
- **Lesson H. Gender**: Future university-based capacity-building programs need to encourage universities to integrate a holistic model of gender and youth employment into the initial program designs as well as requiring each approved project to develop a gender mainstreaming plan in order to ensure appropriate staff and implementing partner support and budget lines.
- **Lesson I. M&E and communications**: As capacity increases, the number of activities increases and the number of institutional partners for a university-based capacity-building project are likely to increase. It is therefore very important for a university-based capacity-building program to have a focused M&E and communications strategy backstopped by appropriate staff from the start in order to: 1) have an accurate accounting of all their in-kind and financial collaborations with other projects; 2) target and monitor the impact of their capacity-building activities on different stakeholder groups; 3) monitor the evolution of an impact for any unintended outcomes; and 4) have an accurate tracking of the project's multiple activity beneficiaries and beneficiaries who only benefitted from one or two activities.
- **Lesson J. Invitations to sponsored capacity-building events**: Project invitations to trainings, conferences, and workshops can open the door to capacity-building, but also to mini-sabbaticals from the day-to-day rigors of a job. These invitations are also greatly in demand, especially when they are sponsored. Future programs need to be careful how they pick who to invite in order to ensure the capacity-building goes to people who will actually use the training and the program can track who got the training and what they did with it in order to improve their capacity-building for future programs and policy initiatives. Given the high rates of staff turnover in many district-level offices of government ministries, this type of tracking is the responsibility of the agency charged with the capacity-building, not the agency that is reportedly benefitting from the capacity-building event.

4.5.2. CONCLUSIONS

EQ. 5.A: The high levels of stakeholder buy-in observed during the project are likely to continue even though conditions for sustaining some of the project's key platforms—including some platforms widely considered to be examples of best practice—are not fully assured.

Some key second-generation institutional challenges identified in the FGDs and online questionnaires that need to be addressed during the transition year that follows the end of FCMCBSP include:

- **Business plans**: Developing, pilot testing, and scaling up the business plans needed to sustain some of the most critical infrastructure, equipment, vehicles, extension, communication, and outreach platforms created and scaled up under FCMCBSP and SFMP not scheduled for support under ACECoR.
- **Health and safety**: Developing a standard health and safety manual and certification process for all CCM and DFAS activities.
- **Strategic planning and donor coordination**: Shifting the focus of CCM's strategic planning process and donor support away from project-focused to the wider mission of CCM and DFAS in Ghana and West Africa.
- **UCC administrative support**: Co-defining with the UCC administration:
  - **Procedures**: An action plan for streamlining CCM and DFAS procedures (that complies with UCC rules and regulations) for accounting, procurement, equipment installation and maintenance, health and safety standards, M&E, communications, database management, as well as updates to inform ongoing and projected new activities to the new rules and regulations of the World Bank and other donors CCM may add over the next five years.
  - **Faculty incentives**: An action plan for identifying new UCC-level mechanisms for compensating faculty for time spent on the grants and ensuring grant-getting and grant-related activities count toward UCC tenure and promotion decisions.

EQ 5.B: The stakeholders interviewed in the FGDs and online questionnaires identified a large number of activities they considered to be best practices. Unfortunately, the way the M&E system was set up, it was often difficult to examine patterns of participation in some of these best practices (like JFCoM, FASoG, conferences, and different types of exchange programs), the impact of these different patterns of participation, or even the aggregate impact of the trainings on specific agencies or offices within a bigger agency.

A number of stakeholders identified various cross-cutting lessons learned, many of which could be applied to other types of capacity-building projects as well as UCC's next generation of CCM and DFAS programming.

4.5.3. RECOMMENDATIONS

Although conditions for sustaining the most critical platform results are clearly in place, the project's success has catalyzed a series of second-generation bridge institutional issues that need to be addressed in order to link FCMCBSP and the next generation of CCM and DFAS's growth and development.

Important Bridge Institutional Activities for the Coming Year (April 1, 2020-March 30, 2021)

Recommendation 3.6 New Business/Sustainability Plans (FY 2020-future): Over the next year, the CCM Business Manager needs to monitor the development of the business/sustainability plans for each of the key CCM platforms.

- **Recommendation 3.6.a. Office/lectures/computer rooms**: Collaborate with relevant university offices on the development of a business plan for capturing some of the income the grants are paying to the university for equipment and office renovations, informed by examples of best practice from various U.S. and Ghanaian universities.
- **Recommendation 3.6.b. Short-term trainings:** Collaborate with UCC's training development unit to create: 1) a fee-based model for the short-term trainings; and 2) a marketing strategy for the training that will facilitate some of CCM's existing and potential donors as well as other NGOs paying the cost of specific trainings for key stakeholder groups, informed by various examples of best practice in similar university-based programs.
- **Recommendation 3.6.c. Conferences**: CCM needs to closely collaborate with its new and existing donors to: 1) develop a new model of multi-donor support for the next biannual fisheries and coastal management conference (in 2021); and 2) consider ways this model could be scaled up to workshops and future conferences.
- **Recommendation 3.6.d. Journal of Fisheries and Coastal Management and Fisheries and Aquaculture Society of Ghana**:
    - **Recommendation 3.6.d.i. Exchange visits**: Facilitate the leaders of JFCoM and FASoG meeting and communicating with leaders of other successful journals and societies in Ghana to learn how they operate.
    - **Recommendation 3.6.d.ii. Scale up**: Work closely with these leaders to better understand their future plans and what if any interest they have in getting assistance from any of the UCC's existing or projected donors.

Recommendation 3.7. New Health and Safety Review Process (FY 2020-future):

- **Recommendation 3.7.a. DFAS and CCM health and safety manual**: Create a health and safety platform that identifies: 1) the health and safety procedures for all programs and program-related infrastructure (*e.g.* laboratory, training, research, and equipment [including vehicles], field and laboratory equipment, and the research boat); 2) any recommended training and certification programs for faculty, students, and staff; 3) emergency protocols and contract language needed to ensure future contracts support these conditions and factor in the costs of any necessary trainings, certifications, or insurance into future contracts. This exercise should be informed by examples of best practices from U.S. and other Ghanaian universities.
- **Recommendation 3.7.b. Health and safety training**: Anticipate the need for: 1) familiarizing new and existing donors with these procedures during a donor coordination meeting or strategic planning workshop; and 2) ensuring all faculty, researchers, staff, and students are trained and pass certification requirements.

Recommendation 3.8. New Annual Planning Workshop and Donor Advisory Board (FY 2020-future): Over the next year, the new CCM Donor Coordination Lead needs to consider pilot testing the concept of an annual planning workshop during which each project and the ten platform leaders present their plans for the coming year and discuss some of the most critical issues related to the scale up.

- **Recommendation 3.8.a. Donor advisory board**: Define new mechanisms for coordinating donor input into the annual planning workshop.
- **Recommendation 3.8.b. Endowment**: Identify URI's and other partners' interest in and willingness to help CCM explore developing an endowment over the next 5.5 years.

Recommendation 3.9. New UCC procedures grantsmanship action plan (FY 2020-future): In conjunction with strategic planning activities, UCC might consider organizing a joint UCC

administration/faculty group on grantsmanship, which could review university-level issues and opportunities large grants present (see Section 4.1.3., Recommendation 1.1.c.).

- **Recommendation 3.9.a. Exchange visits**: Leverage UCC's contacts with URI and other international universities to research how they compensate staff for activities related to large grants, tenure and promotion, and perhaps even request a Fulbright study tour of different U.S. universities to examine different examples of best practice.
- **Recommendation 3.9.b. Action plan**: Consider ways UCC can better compensate faculty and staff who attract and manage grants that are compatible with UCC's rules and regulations.
- **Recommendation 3.9.c. Procurement, accounting, and development office procedures**: Continue to monitor the action plan and pilot activities identified to streamline these procedures during the FCMCBSP closeout sessions.

4.6. EVALUATION QUESTION 6: WHICH USAID/UCC FCMCBSP CAPACITY-BUILDING ACTIVITIES ARE THE MOST AND LEAST EFFECTIVE IN IMPROVING SUSTAINABLE MANAGEMENT OF GHANA'S MARINE AND COASTAL RESOURCES?

4.6.1. FINDINGS

The genius of FCMCBSP was its commitment to the identification, pilot testing, and partial scale up of a large number of different platforms that built the capacity of different stakeholder groups from the grassroots to the upper echelons of the Ghana government. For this reason, it is not surprising each of the stakeholder groups identified some of the same activities—like the short-term trainings—as both most and least effective. (Table 7).

Table 7. Sample Stakeholder Rankings of Which FCMCBSP Capacity-strengthening Activities Were Most and Least Effective at Improving Sustainable Management of Ghana's Marine and Coastal Resources[93] [94]

Activity	FCMCBSP Staff	UCC Faculty & Researchers	Govt	NGOs & Producer Group	Media
Number of Respondents (n=x)	N=21	N=23	N=70	N=9	N=17
Activities Ranked Most Effective					
Renovating and equipping the fisheries and coastal research laboratory	71%	61%			
Refurbishing and equipping office/lecture/computer rooms and library	48%	26%			
Acquisition of vehicles		39%			
Operationalization of CCM	67%	35%			
Support for postgraduate (M.Phil. & Ph.D.) training program	86%	43%			
Short-term trainings			91%	67%	59%
Biannual policy conferences	43%	17%		67%	24%
Workshops			21%		71%

[93] This table includes only a partial list of the main rankings. See Annex IV, Tables 18, 20, 23, 27, and 30 for a full list of rankings.
[94] Methodology: Percentage represents the percentage of individuals who responded to the questionnaires who ranked the activity as one of the top five most or least successful FCMCBSP activities.

Activity	FCMCBSP Staff	UCC Faculty & Researchers	Govt	NGOs & Producer Group	Media
Academic and technical staff capacity strengthening		65%			
Cuttlefish research project				44%	
Activities Ranked Least Effective					
Short-term trainings			29%[95]	56%	35%
Analysis of value chains of the fish trade	57%	48%			
Strengthening community-based groups[96]	71%				
Promoting supplementary livelihoods in coastal communities	86%	35%			
Wetlands ecological health monitoring using school clubs and communities	24%	35%			
Research activities			23%		
Policy formulation review			23%		
Cuttlefish research project				11%	
Conferences		26%		78%	41%[97]
Workshops			10%		24%

Source: FCMCBSP Final Evaluation online questionnaires, January 2020. Annex IV, Tables 18, 20, 23, 27, and 30.

4.6.2. CONCLUSIONS

Stakeholder perceptions of the most effective and least effective activities varied widely depending upon their special needs and concerns. Based on the feedback the evaluators received during FGDs and KIIs, it was this willingness to diversify and respond to the different needs and concerns of these audiences that accounts for 96 percent of the government, NGO/producer groups, and media stakeholders who responded to the online questionnaire (n=96) and 84 percent of the FCMCBSP faculty, staff, and board and DFAS staff (n=44) agreeing *"FCMCBSP has improved my personal technical and scientific knowledge of the most critical issues related to fisheries and coastal resource management."* (Annex IV, Tables 14 and 15).

4.6.3. RECOMMENDATIONS

Important Bridge Institutional Activities for the Coming Year (April 1, 2020-March 30, 2021):

Recommendation 3.2. New CCM M&E Strategy (FY 2020-future):

- **Recommendation 3.2.a. (same as in Section 4.2.3) Full-time M&E officer**: Future CCM-managed projects should anticipate the need for a qualified full-time M&E officer from the start, and make sure all staff and CCM M&E officers are trained in the M&E regulations of specific projects from the start.

[95] This low ranking is attributed to the stakeholders' sense that the project did not adequately target trainings to many of the government staff that needed it.
[96] This activity was executed by the same consultant-led team that executed the livelihood activities.
[97] This low ranking seems to be related to the fact that only a small percentage of the journalists who were given invitations to the biannual policy workshop had their participated supported (*i.e.*, per diem, gas, and lodging) for the conferences. In contrast, the project was able to support a larger number of journalists attending the workshops.

- **Recommendation 3.2.b. (same as in Section 4.2.3) Internal indicators**: If any new project activities are added that are not tracked by the indicators in the M&E plan, develop a set of internal indicators that can track both participation and impact.
- **Recommendation 3.2.c. Global strategy**: Develop an M&E global strategy for the DFAS and UCC units that applies to all projects.
- **Recommendation 3.2.d. M&E training**: Ensure the CCM M&E Officer is trained and receives full documentation on all new donor rules and expectations for reporting whenever a new CCM or DFAS program is funded.
- **Recommendation 3.2.e. Database**: Ensure any new CCM and DFAS programs use the CCM and DFAS stakeholder beneficiary database to track their participants from the start.
- **Recommendation 3.2.f. M&E training**: Facilitate an annual one-day course on M&E for the VC and all senior management to ensure the head administrators understand M&E and grant reporting requirements.[98]

[98] This recommendation was made by the UCC VC, who has already approached FCMCBSP management about providing this training.

ANNEX I. FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS TABLE

Evaluation Questions	Summary Findings and Conclusions	Summary Recommendations for the Closeout and Following Year and Cross-Cutting Lessons Learned to Inform Future Programming[99]
EQ 1. To what extent has the USAID/UCC FCMCBSP achieved its intended goal and objectives as defined by the results framework? *EQ 1.a. PIR 1: Strengthened organizational and human capacity: Has organizational and human capacity been strengthened as a result of improved infrastructure (KRA 1.1) and increased technical and scientific knowledge (KRA 1.2)?* *EQ 1.b. PIR 2: Increased information and knowledge for NRM: Have efforts to increase marine and coastal research and resource assessment (KRA 2.1) and improved*	The evaluators confirmed through the online questionnaires, FGDs, and review of the project's summary data that FCMCBSP successfully strengthened the core organizational and human capacity of UCC in sustainable fisheries and coastal management by: • **KRA 1.1.** Renovating and refurbishing the DFAS laboratory, computer rooms, and library and acquiring field equipment; and • **KRA 1.2.** Building the capacity of a core group of professionally trained research staff, lecturers, and technicians attached to DFAS and CCM to carry out research and provide training to UCC graduate and undergraduate students as well as undergraduates in the sister programs of the other four Ghanaian universities working on fisheries and coastal resource management issues. Over the last five years, DFAS and CCM leveraged this increased capacity to attract two additional major grants (from the World Bank [$6,399,999] and DANIDA [$800,000]) and four minor grants (from the National Geographic Society [$50,000], French Embassy [$4,750], The World Academy of Sciences [$8,941], and Australian AID [$60,000]), and is currently in negotiation with the African Union, Germany, and Norway about other types of future collaboration (Annex V. Table 17). In large part because of FCMCBSP's start-up investment and early success in attracting additional grants, UCC is now widely recognized as being the lead university-based center for fisheries	**Short-term Closeout (March 2020)**: • **1.1. Closeout planning processes**: Expand the focus of FCMCBSP's closeout processes to include two outside facilitators, one appointed by the UCC VC as his personal representative and one from outside UCC. o **1.1.a. New staffing and management plan**: Identify and define the position descriptions of the ten most critical CCM staff identified for the next phase, including: 1) general administration/office management; 2) M&E; 3) extension and communication; 4) partner coordination; 5) online data resources; 6) gender; 7) health, safety, and risk management; 8) training, workshops, and conferences; 9) donor coordination; and 10) research. o **1.1.b. Bridge transition year strategic plan**: Develop a draft program plan for all activities and funded projects during this transition year identifying how the project plans to address key issues identified in the final evaluation (*i.e.*, the first year FCMCBSP ends [April 30, 2020-March 30, 2021]). o **1.1.c. Administrative procedure review and action plan**: - **1.1.c.i. Rules and regulations**: Review principal lessons learned from FCMCBSP regarding UCC

[99] The recommendations are numbered as follows:
- All recommendations in the 1.x sequence are for closeout/transition activities (March 2020);
- All recommendations in the 2.x sequence are for most pressing bridge-funding institutional issues for the coming year (April 1, 2020-March 30, 2021); and
- All recommendations in the 3.x sequence are for important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021).

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communication, extension and outreach (KRA 2.2) resulted in increased information and knowledge for NRM?	and coastal management and as an emerging regional West African Center of Excellence as witnessed by its January 2019 receipt of the World Bank ACECoR project. The eight most frequently noted factors project staff felt had a negative impact on the project's achievement of its intended goal and objectives as defined by the results framework were: 1. The contract language for the G2G grant, which did not allow for any direct institutional support to UCC through overhead nor for the project to buy back staff time, since this was considered counterpart funding. 2. The original budget in the approved grant was made in dollars but the project was paid in cedis, so the actual amount of money dispersed to the project was less than originally budgeted since the project was often forced to purchase equipment in dollars, which required the reconversion of the cedis back to dollars. 3. UCC's cumbersome procurement, accounting, and development office procedures were the source of major delays in getting equipment and starting many activities on time. 4. The UCC development office, which is charged with managing the physical refurbishment of offices and labs, had very little experience in managing grants activities and created a host of bottlenecks in executing grants. 5. The high rates of turnover in the university accountant positions (four times over the life of the project) necessitated constant retraining. 6. A one-year delay in the receipt of project funds from USAID in early 2017 (FY 2016), which caused may FCMCBSP activities to be eliminated or delayed. 7. The national hiring freeze on government employment, which delayed the process needed to transform the FCMCBSP temporary staff positions into permanent CCM positions. 8. Project leaders did not understand the importance of having a well thought out M&E and communication strategy from the start or how this could complicate (and undervalue) the project's ability to track its impact and results.	rules and regulations concerning procurement, accounting, and the development office. - **1.1.c.ii. Procedures**: Develop a joint action plan to pilot test new ways of streamlining these procedures. - **1.1.c.iii. Visits and assistance**: Facilitate this process by promoting exchange visits and technical assistance. • **1.2. DFAS laboratory**: o **1.2.a. ISO accreditation and manual**: Ensure the DFAS consultant charged with completing the ISO accreditation and developing a laboratory user and safety manual finishes before FCMCBSP closes. o 1.**2.b. Equipment procurement**: Speed up procurement to get the missing parts the DFAS consultant needs to get the AAS and GC equipment in the laboratory fully installed before FCMCBSP closes. **Most pressing bridge-funding institutional issues for the coming year (April 1, 2020-March 30, 2021)**: Four areas were identified where there is a pressing need for additional USAID support to complete certain activities critical to building the new institutional framework that DFAS and CCM need to link the FCMCBSP achievements to their new, more expanded donor portfolio. • **2.1. UCC-URI dual-degree program**: (slated to start August 2020) Consider providing the complementary support DFAS needs to assist the ten Ph.D. students scheduled to start the dual enrollment program in August 2020 to buy UCC-URI extra time to tap other donor and internal resources for future funding. • **2.2. DFAS writing workshops**: Consider supplementing support for and scaling up of the writing workshop UCC is already planning to encourage the consultants and graduate students who participated in

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	Five of the most frequently cited factors that the UCC and USAID-funded projects who were interviewed in the FGD identified as facilitating the project's effectiveness, efficiency, and results were: 1. The project's strong committed leadership from its Manager, M&E Coordinator, and Board. 2. The well-trained project staff. 3. The project's strong collaboration with URI, which was nurtured through two USAID-funded projects (ICFG and SFMP), helped create and maintain a series of synergistic relationships that increased the effectiveness, efficiency, and impact of all three projects. 4. USAID/Ghana's willingness for the project to pilot test a large number of innovative new sub-activities and platforms not in the original proposals. 5. The active support of UCC administration, which included: 1) transforming the position of the CCM Coordinator into a directorship; 2) providing in-kind support for electricity, water, and space; 3) providing the salaries for all of the professors and the two senior laboratory managers; 4) agreeing to create and fund two permanent research fellow positions for CCM; 5) providing a $100,000 no-interest loan facility to the project in FY 2016 when USAID/Ghana experienced a delay in receiving its funding from Washington; and 6) agreeing to convert the six temporary staff positions in CCM (which were scheduled to end March 30, 2020) into permanent research fellow positions (despite a nation-wide hiring freeze) starting May 1, 2020. Although FCMCBSP has not completed sustainability plans for most of its activities, there is a strong commitment by staff to maintaining and scaling up most of the activities and platforms created—even those not being supported by ACECoR—now that the UCC VC has assured CCM the six FCMCBSP staff positions will become permanent. **Challenge #1**: Developing a draft one-year transition action plan for CCM management capable of managing the massive increase in activities accompanying the new projects FCMCBSP attracted.	the studies—as well as any faculty who backstopped them in the past or is willing to in the future—to complete drafts and submit them to refereed journals for publication. Since the majority of the graduate students are women and publishing these articles is essential to them getting hired by UCC and the other Ghanaian universities, this activity will strengthen FCMCBSP's long-term gender impact. • **2.3. CCM and DFAS job fair support**: Consider assisting DFAS and CCM to develop better models for helping their graduate students get jobs and/or the post-doctoral opportunities or internships likely to lead to jobs. This is an activity that could be managed by a retired professor from UCC or another university who is well known to prospective employers. This professor could: 1) conduct a quick-start employment and networking opportunities analysis for the fisheries and coastal management sector in Ghana; 2) use this information to develop a series of virtual and in-person job fair presentations by prospective public-sector employers or agencies offering post-docs; and 3) coach FCMCBSP-funded graduates to become more entrepreneurial and consistent in their job searches and interviewing skills. If this pilot is successful in getting students jobs over the next years, CCM and DFAS could try to institutionalize this type of career counseling into the mainstream DFAS programs. • **2.4. DFAS senior fellows program**: Help DFAS pilot test two options for reducing the steep faculty-student ratio that is one of the negative unintended consequences of the sharp increase in graduate student funding since FY 2015. These options include: o **2.4.a. Sabbaticals**: Pilot test a senior fellows program at DFAS and CCM to provide top ups for senior faculty from other Ghanaian and regional universities to supplement their sabbatical pay in

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	Challenge #2: Accelerating the procurement processes needed to complete the installation of the laboratory and ISO certification. **Challenge #3**: Addressing four outstanding issues needed to consolidate FCMCBSP's results: • **#3.A.** Fully funding the initial pilot test of the URI-UCC dual-degree program. • **#3.B.** Increasing publication on the five FCMCBSP research projects. • **#3.C.** Assisting the 34 FCMCBSP students finding the types of permanent employment in the sector expected from the FCMCBSP-funded scholarships. • **#3.D.** Mitigating the impact of the sharp increase in the faculty-student ratio on training and research quality. **Activities that increased the supply of quality marine and coastal research and research assessments**: All major UCC and non-UCC stakeholders interviewed in FGDs and KIIs confirmed the project increased the supply of high-quality marine and coastal research and assessments used to inform some of the most critical national-level policy debates on fisheries and coastal management issues over the last five years. They and the technical review were also able to identify several important policy decisions—like the *saiko* ban and the country's first one-month closed season—that were set in motion by the studies' results. **Activities that increased stakeholders' access to quality marine and coastal research and research assessments**: Another important achievement of FCMCBSP was the creation of several critical platforms that increased stakeholder access to high-quality marine and coastal research and assessments and reports, including: • The FishCoMGhana online database; • The biennial fisheries and coastal management conferences; • A series of five short-term courses used to train staff associated with the different stakeholder groups;	return for agreeing to mentor, supervise, chair, and/or co-chair student thesis committees, and possibly even teach some critical courses. o **2.4.b. Fulbright Fellows**: Ask USAID to fast forward a UCC request for two Fulbright teaching positions in DFAS for the 2020-21 academic year that could hopefully be renewed for the next five years.

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	• A four-pronged media development strategy widely heralded by all stakeholders for having dramatically increased media coverage on fisheries and coastal resource management issues in Ghana; • The country's first fisheries and coastal management journal, JFCoM; and • The country's first national professional association in the sector, FASoG.	
EQ. 1.c. Has the implementation of coastal community-based activities resulted in increased opportunities for NRM or income generation among the rural families and has it impacted the targeted communities?	**Livelihood activities**: The unsuccessful execution of FCMCBSP's support for livelihood activities using a series of short-term consultant contracts backstopped by technical experts from UCC and other sources highlights the need for CCM to develop an alternative model to achieve its official mandate for community-level outreach and extension. **Wetlands monitoring**: The community-based FGDs confirmed NGO studies' results that show FCMCBSP successfully: 1) co-piloted a new model for promoting ecological monitoring of wetlands with two IGAs in the affected communities; and 2) built the capacity of the schools to improve community advocacy with local authorities in the governance of fisheries and coastal resources. Although there is a great deal of anecdotal evidence from interviews with former students that the program influenced their higher education decisions (as well as their and their families' continued support for improved NRM and coastal management issues), this was not tracked by the NGOs' research or M&E systems, which focused primarily on the project's short-term impact on NRM practices. **NGO capacity**: The active engagement of FCMCBSP—in combination with other supports from the USAID-funded CSLP and SMFP—on the FCMCBSP wetlands monitoring activity contributed to the technical and organizational capacity of the two most active NGOs working on coastal management and fisheries issues in Ghana, which they are scaling up or intending to scale up to other communities they serve in conjunction with other USG and non-USG-funded projects.	**Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021):** • **3.1. New CCM extension programs (FY 2020-future)**: o **3.1.a. Community-based activities**: Consider shifting the focus of CCM's extension mandate away from direct execution of community-based activities toward backstopping successful NGO and government-led initiatives at the community level. o **3.1.b. Scale up opportunities**: Consider examining ways its highly successful community-based wetlands monitoring program (which is linked to one of the DFAS-supervised research programs) could be scaled up through another donor-funded project. o **3.1.c. Monitoring**: Consider ways the M&E of CCM's community-based activities could be strengthened by involving more UCC faculty and students from social science departments.

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EQ 2. What unintended outcomes have the USAID/UCC FCMCBSP's capacity strengthening activities achieved relevant to improving sustainable management of Ghana's marine and coastal resources?	Some of the key unintended outcomes of FCMCBSP include: • The dual-enrollment degree, joint grooming of graduate students, and J-term programs with URI; • Media training initiatives; • The biannual policy conference; • Establishment of the first wet laboratory (to complement the DFAS laboratory the grant envisioned) • Undergraduate research grants; • JFCoM; and • FASoG. All but two of these were conceptualized during the staff and administrators' initial exchange visit to URI. USAID/Ghana's flexible budget process and supervision helped encourage UCC's willingness and ability to pilot test and scale up these promising initiatives. Many of these unintended outcomes created the chief mechanisms for FCMCBSP stakeholders, who responded to the online questionnaire report that they have used and are likely to continue to use capacity built to build and maintain the professional skills and knowledge they developed under FCMCBSP. The majority of the same non-UCC respondents to the online questionnaires and FGD participants reported these activities increased the organizational capacity of their institutions, which included: • The national, regional, and district-level offices of MoFAD and the Fisheries Commission; • The project's two main NGO partners (Friends of the Nation and Hen Mpoano); • UCC's four sister universities with DFAS departments (UG, UDS, KNUST, and UENR); • 25 national and regional media outlets; and • The two other USAID-funded fisheries and coastal management projects in Ghana (CSLP and SFMP). To date, however, it is hard to track the participation of or benefits accruing to particular groups and sub-groups of	**Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021):** • **3.2. New CCM M&E strategy (FY 2020-future)**: o **3.2.a. Full-time M&E officer**: Future CCM-managed projects should anticipate the need for a qualified full-time M&E officer from the start and make sure all staff and CCM M&E officers are trained in the M&E regulations of specific projects from the start. o **3.2.b. Internal indicators**: If any new project activities are added that are not tracked by the indicators in the M&E plan, be sure to develop a set of internal indicators that can track both participation and impact.

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	stakeholders due to the way the M&E system was managed during the first three years.	
EQ 3. To what extent has the USAID/UCC FCMCBSP collaborated with other USAID-funded projects such as CSLP, SFMP, and GoG partners such as MoFAD, other donor projects and the private sector to achieve the overall purpose of strengthening capacity for sustainable fisheries and coastal resource management?	**Other USAID-funded projects**: FCMCBSP collaborated with its sister USAID-supported projects at all levels (planning, financial, co-monitoring, and networking), which contributed greatly to the success of the project. To date, however, DFAS and CCM have been unable to fully document the cash and in-kind contributions of the two sister projects for the top UCC administration requesting this information because it was not tracked from the beginning. **MoFAD**: Although MoFAD staff who responded to the online questionnaire were enthusiastic about the impact their participation in FCMCBSP activities had on their personal careers, they confirmed this increased individual capacity did not necessarily translate into improved institutional capacity. This was attributed to: 1) very little structured follow-up to trainings or conferences at specific district and zonal offices, or even producer organizations or NGOs; and 2) the way invitations to the trainings and conferences were issued to institutional representatives (rather than focal points), which limited the continuity and cascading impact of the collective trainings and outreach activities. **NGO and producer organizations**: All NGO and private producer organization staff responding to the online questionnaire stated their capacity was dramatically increased by: 1) their joint execution of some of the FCMCBSP research activities; and 2) their participation in the FCMCBSP-sponsored short-term trainings and extension, communication, and outreach activities. This impact was especially pronounced in one of NGOs where a broad cross-section of the staff participated. The impact of this collaboration was less pronounced in the second NGO, where most of the training and outreach activities were routed through a single individual who did not cascade the trainings and is no longer employed by the NGO.	**Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021)**: • **3.3. New communication and extension strategy (FY 2020-future)**: o **3.3.a. Beneficiary database**: Over the next year, the CCM communications and extension officer needs to collaborate with the CCM database lead on the development of a new CCM Communication and Extension Strategy to identify: 1) the principal CCM partners under FCMCBSP and their current priorities for the next phase of capacity-building with CCM; and 2) a strategy for the development and use of a beneficiary stakeholder database to track CCM's progress toward the achievement of this capacity-building and extension strategy. This new CCM Communication and Extension Strategy should: - Start with a policy decision from the Board and CCM Director about which partners from FCMCBSP will be included in the new strategy. - Solicit input from other projects (like the former Africa Lead Project in Ghana) about how the beneficiary database should be designed and what privacy safeguard measures need to be put in place. - Collaborate with the CCM database lead on the development of a beneficiary database for each institution that can be used to track these individuals, protect their privacy, and generate email lists for announcements. - Identify and confirm (by one-on-one discussions with the individual and their supervisor/s) two appropriate focal points (one female and one male) in each of the identified partner groups.

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		- Consider conducting personal visits (via Skype or Zoom if not face-to-face)to each focal person to get to know them and inventory the most relevant staff positions (and staff currently in these positions) and their contact information, taking into account that the group selected is representative of the partners staff working on NRM and coastal resource management and includes a representative number of women as well as men (ideally 50 percent). - Enter the feedback from the interviews and two-way communication with the focal person into the database. - Continue to track all participation of partner staff in the database. - Conduct an annual review of the database to ensure its accuracy. • **3.4. New CCM short-term training strategy (FY 2020-future)**: Over the next year, the Training Lead will develop the new fee-based system for managing and updating the five FCMCBSP short-term trainings. o **3.4.a. Organizational set up**: Have a consultant from a qualified institution that has set up similar types of university-based fee-based training systems advise CCM how to set up training, marketing, monitoring, and billing systems. o **3.4.b. Cascade training**: Consider adding an extra day of ToT training to each of the five core modules that will facilitate the trainees conducting cascade trainings for their colleagues. o **3.4.c. Database**: Ensure future programs consider recording unique identifiers that can be entered into the new communication and extension database for future tracking and networking. This system will also help UCC's future projects avoid double counting when compiling the number of people trained, which most donor-funded projects require.

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EQ 4. To what extent has the project addressed the gender issues related to capacity-building among different groups of beneficiaries and what has the impact been?	There was no mention of gender or any targets for gender in the original project plan USAID/Ghana approved for FCMCBSP. As part of its agreement with USAID/Ghana, FCMCBSP was required to conduct a gender mainstreaming plan *"to ensure gender issues are addressed in the implementation of FCMCBSP within the first year."* This exercise, which was completed in April 2015, included a complete review of the project and identified a series of recommendations for strengthening the consideration of gender in four key area. Based on a comparison of the baseline gender mainstreaming plan with the current situation of the gender mainstreaming in the project based on the project's internal documentation, the evaluators concluded that the FCMCBSP was very effective in addressing many of the most pressing issues that had been identified as potential issues or problems in each of these key areas. **#1. Institutional arrangement and development**: Set targets for and achieved an affirmative action plan for gender parity in the full operationalization of CCM (KRA 1.2) that resulted in 50 percent of the 12 UCC staff and 61 percent of the eight attached CCM senior staff being female by the end of the project (March 30, 2020). **#2. Program development**: **PIR 1**: Organizational and human capacity strengthened: - Set an affirmative action target for FCMCBSP-funded scholarships and research that resulted in the majority of FCMCBSP-supported graduate students who completed the DFAS post-graduate program being female (61 percent of M.Phil students; 75 percent of Ph.D. students). - Supported UCC's existing policies designed to prevent gender discrimination and sexual harassment, as well as accommodations to facilitate pregnant students being able to continue their classroom and field work, which contributed to high rates of female post-graduate student retention (100 percent of FCMCBSP-funded post-graduate students).	**Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021)**: • **3.3. New CCM communication and extension strategy (FY 2020-future) (as recommended in the 2015 gender mainstreaming plan)**: o **3.3.b. New procedure for issuing invitations to sponsored events (FY 2020-future)**: - **3.3.b.i. Invitations**: Ensure all invitations to sponsored events (*i.e.,* events where the cost of the individual participating is being subsidized by a donor) take into account the wider context of capacity-building goals CCM has established in its new communication and extension strategy. - **3.3.b.ii. Gender targeting**: When open-ended invitations are issued to an institution, ensure they indicate a quota for female participants. - **3.3.b.iii. Stakeholder beneficiary database**: Ensure any individual who participates in a sponsored or non-sponsored event is entered into the database. • **3.5. New CCM gender and youth development strategy (FY 2020-future) (as recommended in the 2015 gender mainstreaming plan)**: o **3.5.a. Gender Lead**: Appoint a gender platform leader and ensure this person is appropriately trained and linked to other faculty and centers working on gender issues at UCC and its four sister universities to confirm appropriate focus and tracking of gender in all CCM and DFAS activities. o **3.5.b. Social science collaboration**: Strengthen CCM's involvement with social scientists and gender specialists working on gender issues in the fisheries sector in UCC and other public, private, and donor institutions in Ghana. o **3.5.c. Collaboration with CCM Communication and Extension Lead**: Work

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	- Co-developed (with ACECoR) a new course unit on "Gender Issues in Fisheries" that is now a core course requirement for all DFAS post-graduate students. - Set targets and encouraged a recruitment process that led to 30-36 percent of the 154 fellowships awarded to undergraduate students at UCC and its four sister institutions being awarded to female students in fisheries and coastal management programs. **PIR 2**: Increased information and knowledge for natural resource management: - Provided financial support (through FCMCBSP undergraduate research grants and the post-graduate fellowships) that ensured a high percentage of the graduate students (61 percent) and undergraduate students (30 percent) who participated in the assessments were female. - Helped rebrand the concept of fisheries and coastal management research and employment as a male-dominated sphere by: 1) encouraging and facilitating 43 student presentations on research results (70 percent by women) at the 2017 and 2019 policy conferences; and 2) ensuring most FCMCBSP-funded dissertations and many student undergraduate reports are posted on FishCoMGhana, which has a wide national and international audience. - Set strict gender targets for all community-based activities and required all consultants and NGOs charged with executing these activities to monitor and report on these targets, which led to the active engagement of women in all community-based activities and workshops (51 percent of the 360 community-based workshop participants) verified in the evaluators' FGDs with these groups. **#3. Project performance measurement, monitoring, and evaluation**: Used disaggregated data for setting gender targets and reporting on most of its trainings and scholarship-supported activities.	closely with the CCM Communication and Extension Lead to identify opportunities to support successful initiatives already working on gender issues in the fisheries sector by posting information about them on FishCoMGhana, or having them give a presentation at a workshop or the biannual conference.

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	#4.Gender analyses of implementing agencies: **PMB**: Based on recommendations from the gender mainstreaming plan, added another senior UCC official to the PMB and tried to build its members' understanding of gender issues and their relevance to the project. Program implementation team: Increased the number and status of women on the PITT (see above) and ensured the team was well trained in the UCC human resources guidance on gender and able to mainstream that guidance and the targets for gender into their programs even though UCC never authorized the request to have a full-time gender focal point. There is also abundant evidence from the final performance evaluation online questionnaires, FGDs, and KIIs that the strategy was successful in addressing the gender issues related to capacity-building of the UCC students and undergraduate students who participated in the short-term research grants at UCC and its four sister university programs, but less successful in dealing with the principal gender constraints associated with the faculty and staff affiliated with the projects' principal government, producer group, and university partners. Although the program was very attentive to encouraging the active participation of women in the community-based activities, these activities were only successful in building women's access to IGAs and improved NRM management practices in one of the two pilot initiatives (the wetlands management project with public schools). Two of the best indicators of the successful impact of the 2015 gender mainstreaming plan on UCC's commitment to addressing the gender issues related to capacity-building among the different groups of beneficiaries are: 1) the prominent role gender plays in the new grants the two programs have attracted; and 2) many of the recommendations identified in the original gender mainstreaming plan are being continued and scaled up after the project's end with support from some of the grants.	
EQ 5. To what extent are the USAID/UCC FCMCBSP capacity strengthening	Although ACECoR is helping sustain and scale up the organizational and technical capacity of CCM by facilitating the construction of a new building containing additional laboratory space, funding another 30 Ph.D. and 90 M.Phil. students, and using	**Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021)** • **3.6 New business/sustainability plans (FY 2020-future)**: Over the next year, the CCM Business

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interventions likely to continue after USG support ends? *EQ 5.a. Is stakeholder buy-in likely to continue or be increased after the current project expires?*	these students to scale up all five existing research and assessment programs started under FCMCBSP (with the addition of two new cutting-edge research programs), this rapid expansion has created a number of second-generation institutional challenges (e.g., post-USG-funding) CCM and DFAS must deal with if they are to manage the new program and maintain some of their principal outreach, communication, and extension platforms. Some key second-generation institutional challenges identified in the FGDs and online questionnaires that need to be addressed during the transition year that follows the end of FCMCBSP include: • **Business plans**: Developing, pilot testing, and scaling up the business plans needed to sustain some of the most critical infrastructure, equipment, vehicles, extension, communication, and outreach platforms created and scaled up under FCMCBSP and SMFP that are not scheduled for support under ACECoR. • **Health and safety**: Developing a standard health and safety manual and certification process for all CCM and DFAS activities. • **Strategic planning and donor coordination**: Shifting the focus of CCM's strategic planning process and donor support away from project-focused to the wider mission of CCM and DFAS in Ghana and West Africa; and • **UCC administrative support**: Co-defining with the UCC administration: o **Procedures**: An action plan for streamlining CCM and DFAS procedures (that comply with UCC rules and regulations) for accounting, procurement, equipment installation and maintenance, health and safety standards, M&E, communications, database management, as well as updates to inform ongoing and projected new activities to the new rules and regulations of the World Bank and other new donors CCM may add over the next five years.	Manager needs to monitor the development of the business/sustainability plans for each of the key CCM platforms. o **3.6.a. Office/lectures/computer rooms**: Collaborate with relevant university offices on the development of the business plans for all of the FCMCBSP-funded infrastructure (including laboratories, office equipment, computers, and vehicles) that is informed by examples of best practice from various U.S. and Ghanaian universities. o **3.6.b. Short-term trainings**: Collaborate with UCC's training development unit on creating: 1) a fee-based model for the short-term trainings; and 2) a marketing strategy for the training that will facilitate some of CCM's existing and potential donors as well as other NGOs paying the cost of specific trainings for key stakeholder groups, informed by various examples of best practice in similar university-based programs. o **3.6.c. Conferences**: CCM needs to closely collaborate with its new and existing donors to: 1) develop a new model of multi-donor support for the next biannual fisheries and coastal management conference (in 2021); and 2) consider ways this model could be scaled up to workshops and future conferences. o **3.6.d. Journal of Fisheries and Coastal Management and Fisheries and Aquaculture Society of Ghana**: - **3.6.d.i. Exchange visits**: Facilitate the leaders of JFCoM and FASoG meeting and communicating with leaders of other successful journals and societies in Ghana to learn how they operate. - **3.6.d.ii. Scale up**: Work closely with these leaders to better understand their future plans and what if any interest they have in getting assistance

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	o **Faculty incentives**: An action plan for identifying new UCC-level mechanisms for compensating faculty for time spent on the grants and ensuring that grant-getting and grant-related activities count toward the UCC tenure and promotion decisions.	from any of the UCC's existing or projected donors. • **3.7. New health and safety review process (FY 2020-future)** o **3.7.a. DFAS and CCM health and safety manual**: Create a health and safety platform that identifies: 1) the health and safety procedures for all programs and program-related infrastructure (e.g., laboratory, training, research, and equipment [including vehicles], field and laboratory equipment, and the research boat); 2) any recommended training and certification programs for faculty, students, and staff; 3) emergency protocols and contract language needed to ensure future contracts support these conditions and factor in the costs of any necessary trainings, certifications, or insurance into future contracts. This exercise should be informed by examples of best practice from U.S. and other Ghanaian universities. o **3.7.b. Health and safety training**: Anticipate the need for: 1) familiarizing new and existing donor with these procedures during a donor coordination meeting or strategic planning workshop; and 2) ensuring all faculty, researchers, staff, and students are trained and pass certification requirements. • **3.8. New annual planning workshop and donor advisory board (FY 2020-future)**: Over the next year, the new CCM Donor Coordination Lead needs to consider pilot testing the concept of an annual planning workshop during which each project and the ten platform leaders present their plans for the coming year and discuss some of the most critical issues related to the scale up. o **3.8.a. Donor advisory board**: Define new mechanisms for coordinating donor input into the annual planning workshop.

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		o **3.8.b. Endowment**: Identify URI's and other partners' interest in and willingness to help CCM explore developing an endowment over the next 5.5 years. • **3.9. New UCC procedures grantsmanship action plan (FY 2020-future)**: In conjunction with strategic planning activities, UCC might consider organizing a joint UCC administration/faculty group on grantsmanship, which could review university-level issues and opportunities large grants present (see 1.1.c. in EQ 1 above). o **3.9.a. Exchange visits**: Leverage UCC's contacts with URI and other international universities to research how they compensate staff for activities related to large grants, tenure and promotion, and perhaps even request a Fulbright study tour of different U.S. universities to examine different examples of best practice. o **3.9.b. Action plan**: Consider ways UCC can better compensate faculty and staff who attract and manage grants that are compatible with UCC's rules and regulations. o **3.9.c. Procurement, accounting, and development office procedures**: Continue to monitor the action plan and pilot activities identified to streamline these procedures during the FCMCBSP closeout sessions.
EQ 5.b. What are the lessons learned and best practices, and from which stakeholder or beneficiaries, in achieving results?	The stakeholders interviewed in the FGDs and online questionnaires identified a large number of activities they considered to be best practices. Unfortunately, the way the M&E system was set up, it is often difficult to examine current patterns of participation in some of these best practices (like the Journal, Society, conferences, and different types of exchange programs), the impact of these different patterns of participation, or even the aggregate impact of the trainings on specific agencies or offices within a bigger agency.	**Examples of best practice**: 1. FCMCBSP's biannual national conference on fisheries and coastal management. 2. The five marine and coastal research and resource assessments, which included baseline studies and technical input from highly qualified national consultants with complementary studies by the UCC DFAS graduate and undergraduate students with solid quality control and technical oversight from the senior DFAS faculty.

Evaluation Questions	Summary Findings and Conclusions	Summary Recommendations for the Closeout and Following Year and Cross-Cutting Lessons Learned to Inform Future Programming[99]
	A number of stakeholders identified various crosscutting lessons learned, many of which could be applied to other types of capacity-building projects as well as UCC's next generation of CCM and DFAS programming.	3. FCMCBSP's use of its new system of DFAS undergraduate research fellowships to build a concrete linkage with its four sister DFAS departments that complemented the other ties developed through the research consultancies, JFCoM, FASoG, and conferences. 4. The UCC-URI dual-enrollment program being pilot tested with DFAS before scaling up to at least two other UCC schools (pharmacy and business). 5. The wetlands ecological monitoring project with junior high school students. 6. FCMCBSP's decision to build GITA's capacity through collaborative research, exchange visits to URI, and sponsoring some of their members' participation in the short-term courses, which had huge payoffs in terms of convincing the trawlers to support MoFAD's announcement of Ghana's first closed season. 7. The short-term professional training of DFAS staff, which helped catalyze a number of critical curriculum changes and motivate professors to participate in the program even though they were not getting compensated for the grant activities they supported on top of their already heavy teaching loads. 8. FCMCBSP's four-pronged media strategy, which all stakeholders agreed dramatically increased media coverage of fisheries and coastal management issues in Ghana over the last five years. **Cross-cutting lessons learned**: **Lesson A. Design**: Future university-based capacity-building initiatives need to anticipate the impact of successful activities on: 1) faculty-student teaching and supervision ratios; as well as 2) office/lecture and computer space, and help programs build the systems need to accommodate these effects both during and after the USG-funded grant.

Evaluation Questions	Summary Findings and Conclusions	Summary Recommendations for the Closeout and Following Year and Cross-Cutting Lessons Learned to Inform Future Programming[99]
		Lesson B. Donor supervision: USAID needs to organize capacity-building for projects to help them better understand grant management. **Lesson C. Exchange visits**: Exchange visits to other centers of excellence in the first and second year of a new project can help jumpstart the capacity-building needed in key areas where it is linked to a larger program/set of programs by helping the faculty identify new initiatives to pilot test and scale up. The relationship between this project and UCC that was nurtured under the ICFG and the SFMP is a clear example of this principle. **Lesson D. Faculty incentives**: Future capacity-building programs need to anticipate ways of compensating faculty and permanent staff (through salary top ups or buying back time) for their activities related to the grant that comply with both university and USAID rules and regulations. **Lesson E. Workforce development and gender equity**: For the full impact of USG investment in scholarships to train graduate students—female graduate students, in particular—in emerging fields like fisheries and coastal management to have a lasting impact, it must be linked to activities that help them produce their first publications and transition into the workforce positions they need to occupy to bring about lasting change. **Lesson F. Sustainability plans**: Future projects need to anticipate, support, and track (as part of the M&E system) key processes needed to sustain USG investments after the project ends from the start so these plans can become fully operational while the project still has money and before the improved infrastructure and capacity attracts other projects that may want to capitalize on this baseline USG investment. **Lesson G. Bridge institutional support**: Donors should anticipate the need for a certain amount of bridge institutional support to consolidate key institutional capacities of a successful university-based program IF there

Evaluation Questions	Summary Findings and Conclusions	Summary Recommendations for the Closeout and Following Year and Cross-Cutting Lessons Learned to Inform Future Programming[99]
		is clear evidence the capacities the initial project helped create are being actively scaled up and expanded. **Lesson H. Gender**: Future university-based capacity-building programs need to encourage universities to integrate a holistic model of gender and youth employment into the initial program designs as well as requiring each approved project to develop a gender mainstreaming plan in order to ensure appropriate staff and implementing partner support and budget lines. **Lesson I. M&E and communications**: As capacity increases, the number of activities increases and the number of institutional partners for a university-based capacity-building project are likely to increase. It is therefore very important for a university-based capacity-building program to have a focused M&E and communications strategy backstopped by appropriate staff from the start in order to: 1) have an accurate accounting of all their in-kind and financial collaborations with other projects; 2) target and monitor the impact of their capacity-building activities on different stakeholder groups; 3) monitor the evolution of an impact for any unintended outcomes; and 4) have an accurate tracking of the project's multiple activity beneficiaries and beneficiaries who only benefitted from one or two activities. **Lesson J. Invitations to sponsored capacity-building events**: Project invitations to trainings, conferences, and workshops can open the door to capacity-building, but also to mini-sabbaticals from the day-to-day rigors of a job. These invitations are also greatly in demand, especially when they are sponsored. Future programs need to be careful how they pick who to invite in order to ensure the capacity-building goes to people who will actually use the training and the program can track who got the training and what they did with it in order to improve their capacity-building for future programs and policy initiatives. Given the high rates of staff turnover in many district-level offices of government ministries, this type of tracking is the

Evaluation Questions	Summary Findings and Conclusions	Summary Recommendations for the Closeout and Following Year and Cross-Cutting Lessons Learned to Inform Future Programming[99]
		responsibility of the agency charged with the capacity-building, not the agency that is reportedly benefitting from the capacity-building event.
EQ 6. Which USAID/UCC FCMCBSP capacity-strengthening activities are the most and least effective at improving sustainable management?	The online questionnaires and FGDs showed wide variation in stakeholder rankings of what constituted the most and least effective FCMCBSP activities, which was largely based on their personal experiences with FCMCBSP and context. Although the stakeholders interviewed expressed their verbal appreciation of specific groups of activities, it was difficult to document the impact of these activities on stakeholder capacity because many of these activities started after FCMCBSP created its M&E plan.	**Important bridge institutional activities for the coming year (April 1, 2020-March 30, 2021)** • **3.2. New CCM M&E strategy (FY 2020-future)** o **3.2.a. (from EQ 2 above) Full-time M&E officer**: Future CCM-managed projects should anticipate the need for a qualified full-time M&E officer from the start and make sure all staff and CCM M&E officers are trained in the M&E regulations of specific projects from the start. o **3.2.b. (from EQ 2 above) Internal indicators**: If any new project activities are added that are not tracked by the indicators in the M&E plan, be sure to develop a set of internal indicators that can track both participation and impact. o **3.2.c. Global strategy**: Develop an M&E global strategy for the DFAS and UCC units that applies to all projects. o **3.2.d. M&E training**: Ensure the CCM M&E Officer is trained and receives full documentation on all new donor rules and expectations for reporting whenever a new CCM or DFAS program is funded. o **3.2.e. Database**: Ensure any new CCM and DFAS programs use the CCM and DFAS stakeholder beneficiary database to track their participants from the start. o **3.2.f. M&E training**: Facilitate an annual one-day course on M&E for the VC and all senior management to ensure the head administrators understand M&E and grant reporting requirements.

ANNEX II. EVALUATION STATEMENT OF WORK

STATEMENT OF WORK

Final Performance Evaluation

of

USAID/Ghana's University of Cape Coast (UCC) Fisheries and Coastal Management Capacity Building Support Project

1.0 PURPOSE OF THE EVALUATION

The purpose of the final evaluation is to assess the extent to which the goal and objectives of the UCC Fisheries and Coastal Management Capacity Building Support (USAID/UCC FCMCBS) Project have been achieved, and how the implementation of the project interventions have contributed to achieving USAID/Ghana's CDCS DO.2: Sustainable and broadly shared economic growth, and its sub-IR 2.4.2: Improved local community management of natural resources. The evaluation will specifically identify project components, which either worked well or not, and why to serve as learning to inform future design of similar projects.

The evaluation will provide USAID, its implementing partners and stakeholders in the fisheries and coastal management sector with data on outcomes, best practices and lessons learned to inform future programming.

Audience and Intended Users

The USAID/Ghana Mission, the donors of the project, will be the primary user of the evaluation report. The implementing partner, UCC Department of Fisheries and Aquatic Sciences (DFAS), will use the evaluation findings to determine how the attainment of the project's goal and objectives have contributed to improving the capacity of actors to better manage marine and coastal resources in the project zone of influence. The government of Ghana and other key stakeholders will also use the results of the evaluation as a guide for future interventions. Lessons learned and best practices, from which stakeholders or beneficiaries, in achieving the results of the project, would also be insightful for decision makers during the design of future new projects.

2.0 SUMMARY INFORMATION

The University of Cape Coast Fisheries and Coastal Management Capacity Building Support (USAID/UCC FCMCBS) Project is a five-year project implemented by the Department of Fisheries and Aquatic Sciences (DFAS), of the University of Cape Coast (UCC). The project contributes to USAID/Ghana's Country Development Cooperation Strategy (CDCS) Development Objective 2 (DO.2): Sustainable and broadly shared economic growth; which contributes directly to the CDCS goal of "Accelerating Ghana's transition towards established middle income status". The project is also linked to the following Intermediate Results (IRs) and Sub-IRs under the CDCS DO.2: IR 2.1: increased competitiveness of major food chains; Sub-IR 2.1.1: Increased agricultural productivity; IR 2.4 increased government accountability responsiveness; and Sub-IR 2.4.2: Improved local community management of natural resources.

The project was planned to strengthen UCC's capacity through the DFAS in developing and providing quality and relevant education programs, practical research and advisory services that will support the management of fisheries and coastal resources on a sustainable basis to enhance Ghana's social and economic development. The capacity building program is aimed to facilitate individual and organizational learning which builds social capital and trust, develops knowledge, skills and attitudes and when successful creates an organizational culture and a set of capabilities which will enable the University to set objectives, achieve results, solve problems, and create adaptive procedures which enable them to support national development.

Project Identification data

Strategy/Project/Activity Name	USAID/UCC Fisheries and Coastal Management Capacity Building Support Project
USAID Office	Economic Growth Office
Implementer	Department of Fisheries and Aquatic Sciences (DFAS), School of Biological Sciences, College of Agriculture and Natural Sciences, University of Cape Coast (UCC)
Cooperative Agreement/Contract #	641-A18-FY14- IL#007
Total Estimated Ceiling of the Evaluated Project/Activity(TEC)	US$5.5 million
Life of Strategy, Project, or Activity	October 24, 2014 – October 1, 2019
Active Geographic Regions	Ghana
Development Objective(s) (DOs)	DO2: Sustainable and Broadly Shared Economic Growth, IR2.1: Increased competitiveness of major food chains IR 2.4: Increased government accountability responsiveness
Required evaluation	Yes
External or internal evaluation	External

3.0 BACKGROUND

A. Description of the Problem and Context

The capacity of most developing nations to utilize their coastal and marine assets, while sustainably protecting them from degradation, is lacking. More especially, Ghana is faced with growing challenges in managing coastal and marine resources, such as the dramatic decline of fish stocks and the degradation of coastal resources. The overexploitation of fisheries at artisanal and industrial scales using unsustainable fishing methods, and the pollution of coastal ecosystems, are further concerns. Coastal

ecosystems, especially estuaries, lagoons and their associated wetlands, are becoming increasingly impacted by activities within their catchment areas, with deforestation, intensive agriculture, damming and irrigation all changing the nature of material fluxes (water, sediment, nutrients and pesticides). It is apparent that Ghana's marine and coastal resources are being lost or damaged in ways that are diminishing biodiversity. This is attributable to many factors, including deficiency in monitoring and enforcement of regulations, lack of education, training, research, data gathering and analysis, and low government investments in capacity building for effective management. The lack of adequate human resource capacity, good governance and well-functioning systems impede natural resource management in Ghana.

The development of adequate human capacity through quality education programs and research is a major challenge for developing countries. Government-supported educational and research institutions in Ghana are faced with various challenges including poor and inadequate infrastructure, lack of training materials as well as inadequate equipment. There are also poor incentive packages for staff and students to conduct research and undertake extension and outreach activities.

USAID/Ghana's technical and financial support is aimed at building capacity for developing and providing quality and relevant education programs, practical research and advisory services that will support the management of fisheries and coastal resources on a sustainable basis to enhance nation's social and economic development. USAID/Ghana will assist improving research capability by supporting environments that encourage people to use research. This means improving researchers' skills, as well as their access to research information and resources. It means supporting researchers in playing a more regular and effective role in policy-making. It also means paying special attention where there are skills gaps for example in social sciences.

The project's contribution to sustainable management of coastal and marine resources is consistent with the country's goal of sustained economic growth and poverty reduction. Additionally, the project contributes to Millennium Development Goal 7 on environmental sustainability.

B. Description of the Intervention to be evaluated and Theory of Change

The USAID/UCC FCMCBS project is designed to support in strengthening UCC's capacity in developing and providing quality and relevant education programs, practical research and advisory services to students and other relevant stakeholders. These are expected to support and sustainably manage the country's fisheries and coastal resources for a robust social and economic development.

This capacity building program is aimed to facilitate individual and organizational learning which builds social capital and trust, develops knowledge, skills and attitudes and when successful, creates an organizational culture and a set of capabilities which will enable the university to set objectives, achieve results, solve problems, and create adaptive procedures which enable them to support national development.

The overarching goal of USAID/Ghana's Fisheries and Coastal Management projects is to "Improve sustainable management of Ghana's marine and coastal resources". The goal of the project will be achieved by the attainment of the following objectives and intermediate results:

1. Strengthened capacity for sustainable fisheries and coastal resource management (project purpose)
2. Organizational and human capacity strengthened (sub-purpose 1):
    a. Improved infrastructure (output 1.1); and
    b. Increased technical and scientific knowledge (output 1.2)

3. Increased information and knowledge for natural resource management (sub-purpose 2):
    a. Increased marine and coastal research and assessments (Output 2.1); and
    b. Communication, extension and outreach improved (Output 2.2)

The above intermediate results will be attained through the implementation of the following key activities:

1. Project Output1.1: Improved Infrastructure
    a. Activity 1.1.1: Renovated and Equipped the Fisheries and Aquatic Science Research Laboratory
    b. Activity 1.1.2: Refurbished and Equipped office/Lecture/Computer rooms and Library

2. Project Output 1.2: Increased Capacity in Technical and Scientific Knowledge
    a. Activity 1.2.1: Academic and Technical Staff Capacity Strengthened
    b. Activity 1.2.2: Operationalized Center for Coastal Management
    c. Activity 1.2.3: Postgraduate (M. Phil & PhD) Training Program supported and Research grants in fisheries and management of coastal resources

3. Project Output 2.1: Increased marine and coastal Research and Resource Assessments
    a. Activity 2.1.1: Natural Resource or Fisheries Stock Assessments conducted
    b. Activity 2.1.2: Research and Assessment on Marine Fisheries Governance Issues conducted
    c. Activity 2.1.3: Research on Fish and Shellfish of Commercial Value conducted
    d. Activity 2.1.4: Analysis of Value Chains of Fish Trade conducted
    e. Activity 2.1.5: Biodiversity and Health of Coastal Ecosystems monitored
    f. Activity 2.1.6: Marine and Coastal Fisheries Database developed

4. Project Output 2.2: Improved Communication, Extension and Outreach
    a. Activity 2.2.1: Relevant materials developed and training conducted on Integrated Coastal and Fisheries Management, Climate Change Adaptation and Mitigation, Application of Geographic Information Systems (GIS) and its associated geo-databases

The UCC FCM-CBS project is linked to two other USAID/Ghana funded projects: The Sustainable Fisheries Management Project (SFMP) and the recently closed Coastal Sustainable Landscape Project (CSLP), both of which were expected to work in concert with the UCC FCM-CBS project to improve sustainable management of Ghana's marine and coastal resources. Specifically, the SFMP was purposed to reduce the over exploitation of marine fish resources by undertaking the following:

1. Strengthening the enabling environment for decentralized fisheries and coastal governance;
2. Increase the use of science and applied research to inform decision-making, law enforcement and the implementation of management plans;
3. Heighten the public's awareness of trends, challenges and successes in marine resources management and stronger demand for sustainable use and conservation; and
4. Improve management of marine resources to reduce over-exploitation, to conserve biodiversity and to provide other benefits.

The CSLP, on the other hand, was procured to strengthen capacity for low emissions development through improved coastal forest landscape management. The medium-term outcomes were:

1. Strengthened multi-stakeholder platforms for natural resource and environmental management;
2. Improved community based NRM and Protected Area management capacity in priority areas;

3. Enhanced application of agroforestry and reforestation techniques in priority degraded lands; and
4. Strengthened enabling environment for payment for ecosystem services including REDD+ opportunities

The project originally had three (3) intermediate results, which covered 1) capacity building; 2) research; and 3) extension. However, during project implementation, in December, 2015, the project focused on only two intermediate results by merging the expected results in research and extension. With approval from USAID/Ghana, the project subsequently revised its results framework and performance indicators to align with the new intermediate results. In so doing, the number of indicators reduced from 28 to 24, majority of which are State-F Standard Program indicators. These indicators measure key "output" and "outcomes" in the project's results framework and revised "theory of change."

The FCMCBS project was expected to collaborate with two other USAID/GHANA funded projects to increase the core capacity of the DFAS at the UCC to collaborate with its principal government and non-governmental partners

This revised theory of change argues that IF the UCC FCMBS project activities are successful in:

- Strengthening the organization and human capacity of the DFAS by
  - investing in laboratories, computer rooms and the library;
  - Increasing the technical and scientific knowledge of research staff, lecturers, technicians and students to carry out research and provide training in fisheries and coastal management; and;
- Increasing information and knowledge for natural resource management by
  - Increasing the number of and quality of marine and coastal research and assessments;
  - Improving communication, extension and outreach to local communities.

THEN it will

Improve sustainable management of Ghana's marine and coastal resources, which will contribute to achieving the USAID/Ghana's CDCS DO.2: Sustainable and broadly shared economic growth.

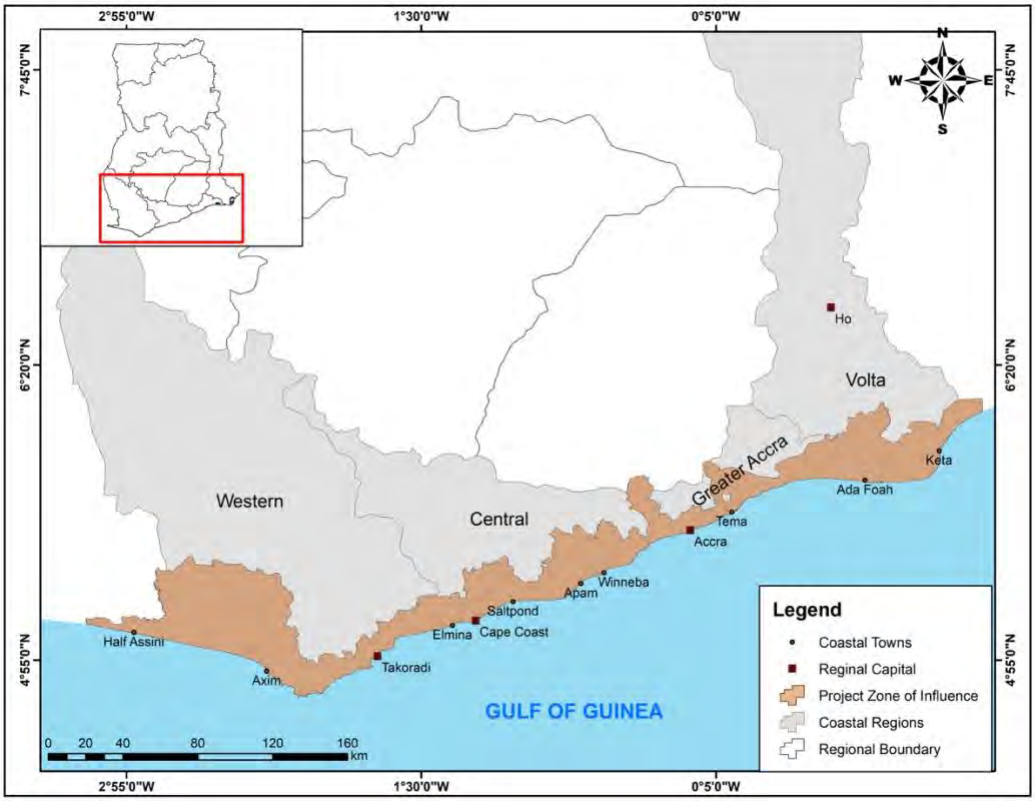
Project target areas and target beneficiaries

At the beginning of the project, the target coastal regions of influence focused on Central and Western regions of Ghana. However, in the course of implementation the focal areas were expanded to include Greater Accra and Volta regions. For instance, participants for the short courses were attracted from the four coastal regions with emphasis on the coastal districts.

S/N	Region	District
1	Central	Abura/Asebu/Kwamankese
2	Central	Cape Coast Metro
3	Central	Komenda Edna Eguafo Abirem
4	Central	Ekumfi
5	Central	Effutu Municipal
6	Central	Gomoa West
7	Central	Gomoa East

8	Central	Mfantsiman Municipal
9	Central	Upper Denkyira East Municipal
10	Volta	Ketu South Municipal
11	Volta	Keta Municipal
12	Volta	Ho Municipal
13	Volta	Nkwanta North
14	Volta	Hohoe Municipal
15	Volta	South Tongu
16	Western	Ahanta West
17	Western	Jomoro
18	Western	Shama
19	Western	Nzema East Municipal
20	Western	Gomoa West
21	Western	Ellembele
22	Western	Sekondi-Takoradi Metro
23	Greater Accra	Kpone Katamanso
24	Greater Accra	Ledzokuku-Krowor Municipal
25	Greater Accra	Accra Metro
26	Greater Accra	Dangme East
27	Greater Accra	Tema Metro
28	Greater Accra	Ada East
29	Greater Accra	Ada West
30	Greater Accra	Ningo Prampram
31	Greater Accra	Ayawaso West District
32	Greater Accra	Ga South Municipal
33	Greater Accra	La Dade-Kotopon Municipal

A map of focal areas of project interventions



TARGET BENEFICIARIES

Beneficiary Group	Number
Government Agencies	74
Academia and Research Institutions	363
Local communities, CBOs and resources users	210
Media	100
NGO and Development Partners	53
Total Number of Beneficiaries	800

4.0 EVALUATION QUESTIONS

In order to guide the end line evaluation, the following critical questions will be answered:

1. To what extent has the UCC FCM-CBS Project achieved its intended goal and objectives as defined by the results framework?
   a. Has organizational and human capacity been strengthened as a result of improved infrastructure and increased technical and scientific knowledge?
   b. Have efforts to increase marine and coastal research and assessment, and improved communication, extension and outreach resulted in increased information and knowledge for natural resource management?

c. Has the implementation of livelihood activities resulted in increased opportunities for income generation amongst the fisher families, and has it impacted the target communities?

2. What unintended outcomes has the UCC FCM-CBS Project's capacity strengthening activities achieved relevant to improving sustainable management of Ghana's marine and coastal resources?
3. To what extent has the UCC FCM-CBS Project collaborated with other USAID-funded projects such as CSLP and SFMP, and GoG Partners, such as the MoFAD, other donor projects and private sector to achieve the overall purpose of strengthening capacity for sustainable fisheries and coastal resources management?
4. To what extent has the project addressed the gender issues related to capacity building among the different groups of beneficiaries and what the impact has been?
5. To what extent are the USAID/UCC FCMCBS Project capacity strengthening interventions likely to continue after USG support?
   a. a. Is stakeholder buy-in likely to continue or be increased after the current project expires?
   b. b. What are the lessons learned and best practices; and from which stakeholders or beneficiaries, in achieving results?

6. Which USAID/UCC FCMCBS Project capacity strengthening activities are the most and least effective at improving sustainable management of Ghana's marine and coastal resources?

5.0 EVALUATION DESIGN AND METHODOLOGY

A cross sectional design is proposed for the implementation of the final evaluation for the project. This will help the project collect information at a point in time to reflect the study population.

In the design, the consultant is expected to adopt suitable systematic data collection techniques to avoid bias of any form and collect adequate and quality data. Consultant should consider the mixed methods, thus, using both the quantitative and qualitative methods of data collection and analysis.

Consultants will be expected to share data collection design and tools with the USAID/UCC FCMCBS Project, METTS II Project and USAID/Ghana for review and feedback and/or discussion, with sufficient time, before they are applied in the field. The Consultants are also expected to ensure that the evaluation method though not limited to, should include the below:

A. *Review of existing Documentation:* Project documents that should be reviewed may include but not limited to the Project Appraisal Document, the project technical proposal, the baseline report, the annual and quarterly project reports, annual work plans, and any other assessment reports related to the USAID/UCC FCMCBS Project.
B. *Key Informant Interviews*: Consultants should interact with key partners and stakeholders of the project in the form of key informant interviews. These key partners and stakeholders include USAID/Ghana implementing partners (SFMP and CSLP), some governmental institutions, some private sector partners and some beneficiaries.
C. *Survey of Beneficiaries:* Consultants are supposed to consider all who have benefitted from the project. This includes students who enrolled under the project, staff of the Department of Fisheries and Aquatic Sciences, Centre for Coastal Management and all others who have benefitted from the project.
D. *Personal Observation***:** The evaluation team is expected to visit selected physical investments supported by the project and document how they are functioning and benefiting the beneficiary institutions.

6.0 DELIVERABLES AND REPORTING REQUIREMENTS

1. Evaluation Work plan:

Within a two (2) weeks of the award of the contract, the lead evaluator shall complete and present a draft work plan for the evaluation to the Agreement Officer's Representative (AOR) at USAID/Ghana, Chief of Operations (CoO) at METSS II and the Project Manager of the USAID/UCC FCMCBS Project for approval.

The evaluation work plan will comprise of an evaluation design which will include: Detailed evaluation design matrix that links the Evaluation Questions from the SOW to data sources, methods, and the data analysis plan; Draft questionnaires and other data collection instruments; List of potential interviewees and sites to be visited and proposed selection criteria and/or sampling plan (must include sampling methodology and methods, including a justification of sample size and any applicable calculations); and Limitations to the evaluation design.

The evaluation work plan will also include

1. Draft schedule and logistical arrangements;
2. Members of the evaluation team, delineated by roles and responsibilities;
3. Evaluation milestones;
4. Anticipated schedule of evaluation team data collection efforts;
5. Locations and dates for piloting data collection efforts, if applicable;
6. Proposed evaluation methodology including selection criteria for comparison groups, if applicable.

The data analysis plan should clearly describe the evaluation team's approach for analyzing quantitative and qualitative data (as applicable), including proposed sample sizes, specific data analysis tools, and any software proposed to be used, with an explanation of how/why these selections will be useful in answering the evaluation questions for this task. Gender, geographic, and role (beneficiary, implementer, government official, NGO, etc.) disaggregation must be included in the data analysis where applicable. The consultant must receive approval of work plan before beginning field work.

2. In-briefing:

Within two (2) working days after submitting the draft evaluation work plan, or in the instance where the evaluators are not in-country, within two days of arrival in Accra, the evaluation team will meet with the USAID/UCC FCMCBS Project staff, METSS II Project and Economic Growth Office for introductions and to discuss the team's understanding of the assignment, initial assumptions, evaluation questions, methodology, and work plan, and/or to adjust the SOW, if necessary.

3. Mid-term Briefing and Interim Meetings

The evaluation team is expected to hold a mid-term briefing with USAID/UCC FCMCBS Project staff, METSS II Project and/or Economic Growth Office on the status of the evaluation, including potential challenges and emerging opportunities. The team will also provide the evaluation METSS II Project Chief of Operation with periodic briefings and feedback on the team's findings, as agreed upon during the in-briefing. If desired or necessary, weekly briefings by phone can be arranged.

4. Final Exit Briefing:

The evaluation team is expected to hold a final exit briefing to discuss the status of data collection and preliminary findings. This presentation will be scheduled as agreed upon during the in-briefing. The evaluation team is expected to hold a presentation either in person, or by virtual means to discuss the

summary of findings and conclusions with USAID/UCC FCMCBS Project staff, METSS II Project and/or Economic Growth Office. The evaluation team will consider comments and make necessary revisions.

5. Draft Evaluation Report:

The draft evaluation report should be consistent with the guidance provided in Section IX, Final Report Format dub-section. The report will address each of the questions identified in Section IV of the SOW and any other issues, the team considers to have a bearing on the objectives of the evaluation. Any such issues can be included in the report only after consultation with METSS II Project. The submission date for the draft evaluation report will be determined in the evaluation work plan. Once the initial draft evaluation report is submitted, USAID/UCC FCMCBS Project staff, METSS II Project and USAID/Ghana will have ten (10) working days in which to review and comment on the initial draft, and submit the consolidated comments to the evaluation team. The evaluation team will then submit a revised final draft report within five (5) working days, and again the USAID/UCC FCMCBS Project staff, METSS II Project office and USAID/Ghana will review and send comments on this final draft report within ten (10) working days of its submission.

6. Final Evaluation Report

The evaluation team will be asked to take no more than three (3) business days to respond and/or incorporate the final comments from contributors (USAID/Ghana, METSS II Project and/or USAID/UCC FCMCBS Project Staff).

7.0 EVALUATION TEAM COMPOSITION

The evaluation team will consist of a team leader and two other experts. A representative from the USAID/Ghana Mission and METSS II Project may be delegated to work full-time with the evaluation team or to participate in selected evaluation activities.

Senior Technical Consultant (Lead):

1. The consultant must be someone with extensive experience as team leader of mid-term and final evaluations of USAID funded projects and the concept of "participatory" assessment processes that elicit high level monitoring and evaluation.
2. Specialist should have a postgraduate degree in Marine or Fisheries Science, or an applicable social science field. S/he should have at least 10 years' senior level experience working in fisheries and aquaculture sector in a developing country.
3. S/he should have extensive experience in project management, institutional capacity building programs, conducting both qualitative and quantitative evaluations/ assessments and strong familiarity with agricultural finance. Excellent oral and written skills are required.
4. The Team Leader should also have experience in leading evaluation teams and preparing high quality documents. The Team Leader will take specific responsibility for assessing and analyzing the project's progress towards achieving its targets, factors for such performance, benefits/impact of the strategies, and compare with other possible options. S/he will also suggest ways of improving the present performance, if any.
5. S/he will provide leadership for the team, finalize the evaluation design, coordinate activities, arrange periodic meetings, consolidate individual input from team members, and coordinate the process of assembling the final findings and recommendations into a high quality document. S/he will write the final report. S/he will also lead the preparation and presentation of the key evaluation findings and recommendations to the USAID/Ghana team and other major partners.
6. Experience with data collection procedures, surveys, and analysis of data using statistical analysis tools.

7. This person should also have good interpersonal and diplomatic skills and demonstrated expertise in gender in order to ensure that the USAID/FtF protocols for considering gender in an assessment as are met.

Senior Technical Writing Consultant and Evaluation Management Consultant (Co-Lead): The senor technical writing and evaluation management consultant should be someone with at least 10 years' experience in managing or co-managing participatory assessment exercise and working with development and food security professionals to improve their skills for systematic write up of reports and bulletins that comply with US government M&E quality standards. The specialist must have a minimum of a masters in a relevant technical areas and have good organizational and pedagogical skills as well as extensive experience in FTF and USAID guidelines and standards including 508 compliance. He/she will have the role of ensuring that all the written deliverables comply with USAID/FTF rules and regulations and USAID/Ghana expectations. He/She will play a critical role in determining a speedy and efficient process for document turnaround.

Senior Marine and Fisheries Specialist. Specialist should have a post graduate degree in Marine or Fisheries Science, or an applicable social science field and have firsthand familiarity with the capacity building issues that the DFAS is focusing on. S/he should have at least 10 years' senior level experience working in fisheries and aquaculture sector in Ghana. This individual will ensure that the most important technical capacity issues and institutional issues that were targeted by the project are measured appropriately in the interviews and that the recommendations and "lessons learned" are realistic.

The work plan must provide information about evaluation team members, including their curricula vitae, and explain how they meet the requirements in the evaluation SOW. Submissions of writing samples or links to past evaluation reports and related deliverables composed by proposed team members are highly desirable. All team members must provide to USAID/Ghana a signed statement attesting to a lack of conflict of interest or describing an existing conflict of interest relative to the project or activity being evaluated (i.e., a conflict of interest form).

8.0 EVALUATION SCHEDULE

A. Period of Performance

Work is to be carried out over a period of approximately Twelve (12) weeks, beginning on or about August 1, 2019 with field work and draft report completed September 30, 2019 and final report and close out concluding October 30, 2019.

The below evaluation schedule is illustrative and will be updated in collaboration with USAID prior to finalization of the work plan

Performance Evaluation Schedule

Timing (Anticipated submission date)	Anticipated Duration (Days)	Proposed Activities
August 1, 2019		Evaluation contract awarded to Consultants
August 8, 2019	5	Consultants prepare and submit a detailed evaluation work plan to METSS II Project
August 12, 2019	1	Evaluation team (Consultants) conducts in-brief with METSS II, USAID and USAID/UCC FCMCBS Project on evaluation work plan

August 16, 2019	5	USAID, METSS II and USAID/UCC FCMCBS Project review evaluation work plan and submit feedback to evaluation team
August 19, 2019	2	Evaluation team integrates comments into work plan and submits final document to METSS II Project USAID and USAID/UCC FCMCBS Project
August 23, 2019	3	Evaluation team completes pre-testing of evaluation instruments/tools
August 30, 2019	5	Evaluation team trains evaluation/survey enumerators
September 16, 2019	15	Collect data from evaluation respondents in the project target areas
September 23, 2019	6	Data Analysis
October 4, 2019	10	Write draft report and submit preliminary findings
October 11, 2019	5	USAID, METSS II and USAID/UCC FCMCBS Project review evaluation draft report and submit feedback to evaluation team
October 18, 2019	3	Evaluation team incorporates comments and prepare final evaluation report
October 30, 2019	3	Evaluation team Leader submits formatted Final Evaluation Report

9.0 FINAL REPORT FORMAT

The evaluation final report should include an abstract; executive summary; evaluation purpose; introduction; background of the project context and project being evaluated; the evaluation questions; the methodology; the limitations to the evaluation; key findings, conclusions, and recommendations; and lessons learned (if applicable).

The evaluation report should be easily understood and should identify key points clearly, distinctly, and succinctly. The findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions.

The Executive Summary should be 2-5 pages in length and present a concise and accurate statement of the most critical elements of the report. It should summarize key points (purpose and background, evaluation questions, methods, findings, conclusions, recommendations and lessons learnt).

The report should provide a brief **Background information**, which should include country and/or sector context; specific problem or opportunity the intervention addresses; and the development hypothesis, theory of change, or simply how the intervention addresses the problem. Describe the specific strategy, project, activity, or intervention to be evaluated including (if available) award numbers, award dates, funding levels, and implementing partners.

The **Evaluation Purpose and Questions** should state the purpose of, audience for, and anticipated use(s) of the evaluation. Clearly state the evaluation questions in this section.

Explain the evaluation or survey Methodology in detail and clearly state sources of information. Disclose limitations to the evaluation, especially, those associated with the methodology (e.g. selection bias, recall bias, unobservable differences between comparator groups, etc.).

NOTE: A summary of methodology can be included in the body of the report, with the full description provided as an annex.

Findings, Conclusions, and Recommendations: Address all evaluation questions in this Statement of Work (SOW) or document why some evaluation questions and/or comments from METSS II Project or USAID/UCC FCMCBS Project or USAID/Ghana have not been addressed for approval.

If evaluation findings assess person-level outcomes, they should also be separately assessed for both males and females.

Findings and conclusions should be specific, concise, and supported by strong quantitative or qualitative evidence. If recommendations are included, separate them from findings and conclusions. Recommendations should be supported with specific findings and should be action-oriented, practical and specific.

Limitations to the evaluation shall be disclosed in the report, with particular attention to the limitations associated with the evaluation methods (e.g., in sampling; data availability; measurement; analysis; any potential bias such as sampling/selection, measurement, interviewer, response, etc.) and their implications for conclusions drawn from the evaluation findings.

Annexes to the report must include:

- Evaluation SOW (updated, not the original, if there were any modifications);
- Evaluation methods;
- All data collection and analysis tools used in conducting the evaluation, such as questionnaires, checklists, and discussion guides;
- All sources of information or data, identified and listed;
- Statements of difference regarding significant unresolved differences of opinion by funders, implementers, and/or members of the evaluation team, if applicable;
- Signed disclosure of conflict of interest forms for all evaluation team members, either attesting to a lack of or describing existing conflicts of interest; and
- Summary information about evaluation team members, including qualifications, experience, and role on the team.

The final version of the evaluation report will be submitted to USAID/Ghana and METSS II Project in hard copy as well as electronically. The report format should be restricted to Microsoft products and 12- point Times New Roman font type should be used throughout the body of the report, with page margins 1" top/bottom and left/right.

The main report should not exceed 30 pages, excluding the executive summary, references and annexes.

The evaluation team leader shall incorporate METSS II Project, USAID/UCC FCMCBS Project, and USAID/Ghana's comments and submit the final report to USAID in electronic format (Microsoft Word) as well as printed and bound copies (Three copies in English) no later than six working days of the receipt of the comments.

10.0 CRITERIA TO ENSURE THE QUALITY OF THE EVALUATION REPORT

The draft and final evaluation reports will be evaluated against the following criteria to ensure quality.

- Evaluation reports should represent a thoughtful, well-researched, and well-organized effort to objectively evaluate the project;

- Evaluation reports should be readily understood and should identify key points clearly, distinctly, and succinctly;
- The Executive Summary should present a concise and accurate statement of the most critical elements of the report;
- Evaluation reports should adequately address all evaluation questions included in the SOW, or the evaluation questions subsequently revised and documented in consultation and agreement with USAID/UCC FCMCBS Project Staff, METSS II Project, USAID/Ghana;
- Evaluation methodology should be explained in detail and sources of information or data properly identified;
- Limitations to the evaluation should be disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.);
- Evaluation findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions;
- Conclusions should be specific, concise, and include an assessment of quality and strength of evidence to support them supported by strong quantitative and/or qualitative evidence;
- If evaluation findings assess person-level outcomes or impact, they should also be separately assessed for both males and females; and
- If recommendations are included, they should be supported by a specific set of findings and should be action-oriented, practical, and specific.

EVALUATION MANAGEMENT

Logistical Support

The USAID/UCC FCMCBS Project will support with necessary logistical arrangements. The project together with METSS II will support the evaluation team identify key documents, and arrange for meetings with key stakeholders. The evaluation team is responsible for arranging other meetings as identified during the course of the evaluation and may request support from USAID/UCC FCMCBS Project and METSS II project. In all these arrangements the USAID/Ghana USAID/UCC FCMCBS Project AOR and EG Office M&E Specialist should be notified prior to each of these meetings.

The consultants should make arrangements for accommodation, vehicles needed for site visits, and meetings, and/or contact METSS II Project to make the arrangements with reasonable notice, if necessary.

However, the evaluation team members will be required to make their own payments for lodging, meals and incidental expenses. USAID/UCC FCMCBS Project and/or the METSS II Project will make available their conference room or another convenient location upon request of the evaluation team as work space. The evaluation team is, however, expected to use their own computers.

Technical Direction

Technical direction during the performance of the evaluation contract will be provided by the METSS II projects' Chief of Operations (CoO) and USAID/Ghana AOR, who will be the point of contact for the Consultant's Evaluation Team during performance.

The AOR, on behalf of the Agreement Officer (AO), is the only USG official authorized to make changes to the terms and conditions of the evaluation contract. In the event that the Consultant believes that it is required to perform activities outside the evaluation contract, they must immediately contact/inform

the AOR before performing these tasks. The Consultant will not be paid any amount in excess of the evaluation budget set forth in the evaluation contract.

CRITERIA EVALUATING THE TECHNICAL PROPOSAL

Technical proposals will be evaluated based on the criteria outlined below.

Technical Evaluation Criteria	Points
Technical Approach	50
Personnel	50
Total Possible Evaluation Point	100

Applicants/Consultants should note that these criteria and sub-criteria serve: (a) as the standard against which the proposal will be evaluated, and (b) to identify the significant matters that Applicant should address in their proposal. The specific evaluation criteria are as follows:

Technical Approach – (50 points)

The technical approach should address the following sub-criteria which will be considered in the evaluation of the proposal:

- A clear strategy to address the evaluation questions, and achieve the evaluation requirements.
- Degree or extent to which the Applicant's technical approach strategy, methodology and activities has the potential to accomplish the tasks within the implementation period.
- Clear articulation of anticipated challenges and description of how they will be addressed.
- An illustrative work plan with timeframes and durations for mobilizing staff, field work, data analysis, and reporting. Work plan should demonstrate logical linkages between task areas and timeframes that combines a strong balance of rigor and reflection.

Personnel (50 points)

Clear, concise and defined proposed key personnel, their role, responsibility, qualification and relevant experience. Include CVs of proposed key personnel, illustrating experience in similar assignments, and references. Refer to Section VII for the required qualification and experience of the required team members for the evaluation.

Cost Proposal Evaluation

Contract award will be made on a best value basis, where all non-cost (technical) factors will be significantly more important than cost. The consultants should have the structure that will allow it to provide the best value and greatest results at the lowest cost. The price proposal of the contract period shall be evaluated in terms of reasonableness and realism to determine the appropriate cost for the work, including the firm's understanding of the work, and their ability to perform the work.

LIST OF ANNEXES

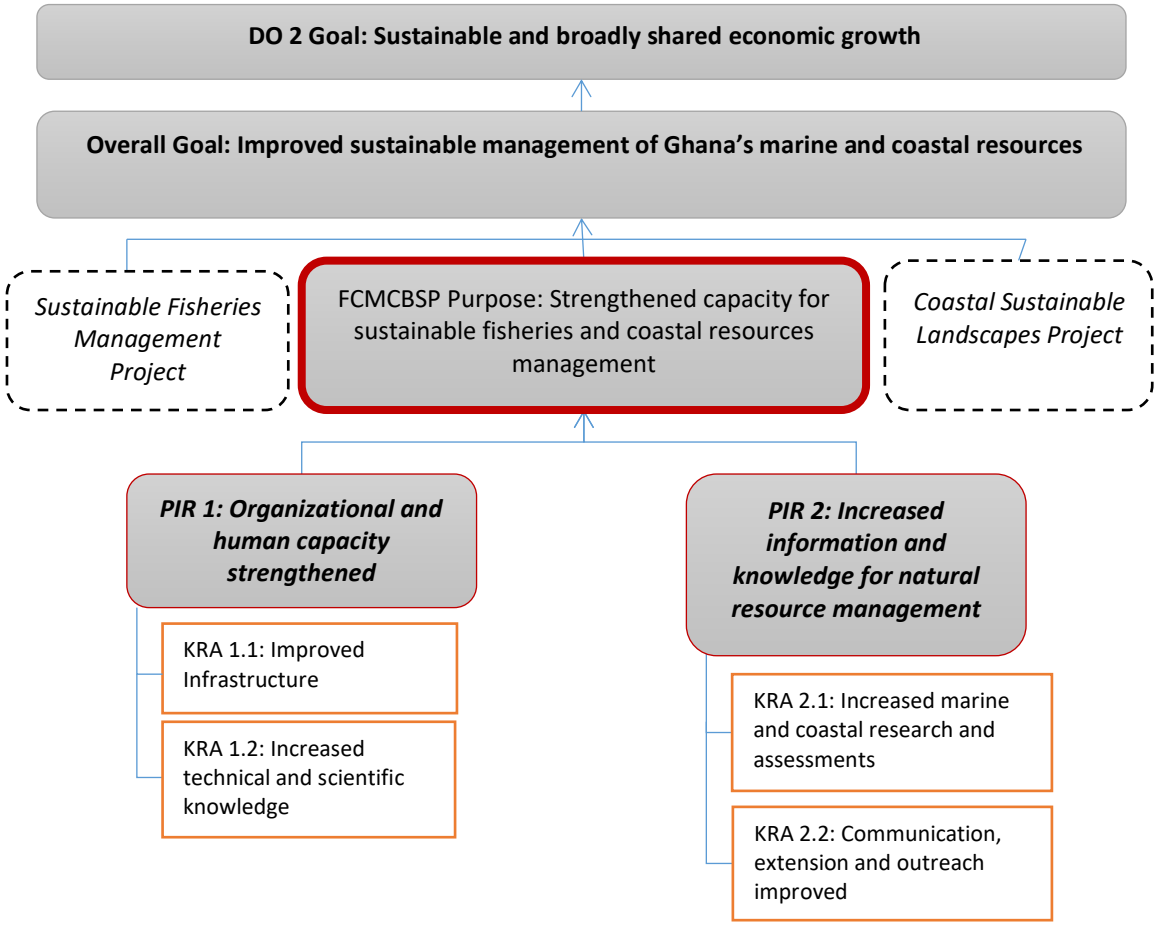
During the evaluation and upon request, the USAID/UCC FCMCBS Project, Economic Growth Office in USAID/Ghana and/or METSS II Project will avail to the contractor the following documents:

1. University of Cape Coast Fisheries and Coastal Management Capacity Building Support (USAID/UCC FCMCBS) Project Description document;

2. USAID/UCC FCMCBS Project M&E Plan
3. USAID/UCC FCMCBS Project baseline report
4. USAID/UCC FCMCBS Project Annual and Quarterly Reports – USAID/UCC FCMCBS Project
5. List of districts and communities
6. List of beneficiaries and stakeholders
7. Case studies and internal evaluation documents developed by project implementers; and
8. Other special studies undertaken by the USAID/UCC FCMCBS Project and USAID/Monitoring, Evaluation and Technical Support Services (METSS) as part of project implementation.

ANNEX

USAID/UCC FCMCBS Project Results Framework



Assumptions: Absence of disruptions in the academic calendar, stable prices of items to be purchased (vehicles, furniture, laboratory equipment)

List of Indicators

No.	Results Area	Indicator Title	Level of Disaggregation
	IR 1: Improved Agricultural Productivity Sub-IR1.1: Enhanced human and institutional capacity development for increased sustainable agricultural sector productivity	4.5.2(6): Number of individuals who have received USG supported long-term agricultural sector productivity or food security training	Sex: Male, Female Duration: New, Continuing
	IR 1: Improved Agricultural Productivity Sub-IR1.1: Enhanced human and institutional capacity development for increased sustainable agricultural sector productivity	4.5.2(7): Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	Type of individual Sex: Male, Female
		4.5.2(27): Number of members of producer organizations and community based organizations receiving USG assistance	
		4.5.2(13): Number of rural households benefiting directly from USG interventions	
	IR 1: Improved Agricultural Productivity Sub-IR1.2: Enhanced Technology Development, Dissemination, Management and Innovation	4.5.2(2): Number of hectares under improved technologies or management practices as a result of USG assistance	Type of Technology Sex: Male, Female, Joint, Association-applied

ANNEX III. PERFORMANCE INDICATOR TRACKING TABLE

No.	Indicator	Baseline	Life of Project target	Performance achieved (actual)	Performance achieved in (%)	On target? Yes/No	
1	Quantities and/or sizes of fish landed by selected canoe fishermen in the Central and Western Regions of Ghana	-	-	-	-	-	
Comments: Periodic stock assessment surveys conducted provide information and data for this custom indicator. The nature of the indicator made it difficult to set baselines, annual targets and performance achieved in a particular reporting period which means results shown by this indicator could only be descriptive. The fish stock assessment was concluded by the project in FY 2017 and data collection supported by postgraduate students. Results indicated that quantities of fish landed by canoe fishermen have shown a gradual decline since 1986 mainly due to increase in fishing effort during the period. The assessments also showed that there is growth overfishing which is confirmed by lower modal sizes of fish landed.							
2	Fishing Mortality at MSY (F_{msy})	0.74	-	-	-	-	
Comments: This is a custom indicator of the USAID/Ghana Sustainable Fisheries Management Project (SFMP) that was only tracked by the USAID/UCC Fisheries and Coastal Management Capacity Building Project. In 2014, the SFMP estimated Fishing Mortality at MSY (F_{msy}) to be 0.74 (as baseline) which was higher than the preferred Fishing Mortality at MSY (F_{msy}) of 0.40. In FY 2017, the SFMP reported Fishing Mortality at MSY (F_{msy}) to be 0.30 which indicates an increase in fishing mortality and a severe decline in population size. Current fishing effort is well beyond the level of sustainability for the small pelagic stocks.							
3	Biomass to produce MSY (B_{msy})	212,726	-	-	-	-	
Comments: This is also a custom indicator of the USAID/Ghana Sustainable Fisheries Management Project (SFMP) that was only tracked by the USAID/UCC Fisheries and Coastal Management Capacity Building Project. In 2014, the SFMP estimated Biomass to produce MSY (B_{msy}) as 182,726 tonnes, which was less than the preferred Biomass to produce MSY (B_{msy}) of 310,476 tonnes. In FY 2017, the SFMP reported Biomass to produce MSY (B_{msy}) as 30,000 tonnes. Current estimated biomass is much lower than those estimated in 2014. This suggests diminishing economic returns.							
4	Number of hectares of biological significance and/or natural resources under improved natural resource management as a result of USG assistance	0	6.9	6.9	100 %	Yes	

No.	Indicator	Baseline	Life of Project target	Performance achieved (actual)	Performance achieved in (%)	On target? Yes/No	
Comments: In Year 3, the project concluded research on the ecological conditions and the overall health status of the *Awiane* lagoon at Half Assini in the Western Region in order to acquire a more comprehensive baseline data on the lagoon for improved management.							
5	Number of hectares in areas of biological significance and/or natural resource showing improved biophysical conditions as a result of USG assistance	0	6.9	0	0	No	
Comments: Following the scientific outcome of research conducted on the lagoon by the project, the assembly has shown commitment in improving the biophysical conditions by collaborating with the local community to improve the sanitary conditions around the lagoon. Targets were not achieved due to political stalemate at the local district assembly in relation to the appointment of the district chief executive. This forestalled progress on the improved management for the lagoon in terms of the removal of solid waste and relocation of animal farms close to the lagoon. However, the project is in discussion with the district assembly to provide a skip to community bordering the lagoon to improve sanitary conditions.							
6	Number of training and capacity building activities conducted with USG assistance	0	40	30	75	No	
Comments: Since the inception of the project, 30 training sessions have been organized. The target was not achieved due to limited funding in FY 2018							
7	Number of people receiving USG supported training in natural resources management and/or biodiversity conservation	0	250	225	90	No	
Comments: Number of beneficiaries include resource users, beneficiaries of supplementary livelihood activities, and members of community-based organizations.							
8	Number of person hours of training in natural resources management and/or biodiversity conservation supported by USG assistance	0	15000	16728	111.52	Yes	
Comments: This is a culmination of "person hours" of all training sessions organized since the inception of the project. Additionally, 7,200 hours was accrued from 20 MPhil students who participated in lectures and seminars for 26 weeks (two semesters) for conservatively three hours per day.							

No.	Indicator	Baseline	Life of Project target	Performance achieved (actual)	Performance achieved in (%)	On target? Yes/No	
9	Number of individuals who have received USG supported long-term agricultural sector productivity or food security training	0	40	36	90	No	
Comments: Thirty-six (36) students (13 males and 23 females) received USG supported long-term agricultural sector productivity or food security training. One MPhil student was withdrawn in FY 2017 due to falsification of research data; One PhD student died in FY 2019 while pursuing an extra-curricular activity. Thirty-four (34) FCMCBSP-sponsored students are expected to successfully graduate by August 2020.							
10	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	0	250	266	106.4	Yes	
Comments: Data for this indicator was largely addressed by the short course trainings organized in Geographic Information Systems (GIS), Coastal Adaptation to Climate Change, Fisheries Management and Integrated Coastal Zone Management.							
11	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	0	10	18	180	Yes	
Comments:							
12	Number of private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) that applied new technologies or management practices as a result of USG assistance	0	10	5	50	No	

No.	Indicator	Baseline	Life of Project target	Performance achieved (actual)	Performance achieved in (%)	On target? Yes/No	
Comments: At the end of the project, five (5) Community-Based Organizations (CBOs) that received technical assistance in supplementary livelihood activities applied new management practices in beekeeping, snail farming and oyster culture.							
13	Number of members of producer organizations and community based organizations receiving USG assistance	0	200	196	98	No	
Comments: One-hundred and ninety-six (196) members in total belonging to the five (5) Community-Based Fisheries Management Groups (CBFMGs) formed in 4 selected fishing communities received technical assistance in supplementary livelihoods activities (snail farming, bee-keeping and oyster culture) by the project during the project implementation period.							
14	Number of farmers and others who have applied new technologies or management practices as a result of USG assistance	0	200	87	43.5	No	
Comments: Members of 4 Community-Based Fisheries Management Groups (CBFMGs) formed in 4 selected fishing communities applied new management practices in snail farming and beekeeping. Data for the indicator was collected at the inception phase of the livelihood activities in these communities. The target was not achieved due to suspension of the activity because of limited funding during FY 2018.							
15	Number of rural households benefiting directly from USG interventions	0	200	196	98	No	
Comments: One-hundred and ninety-six (196) members in total belonging to the four (4) Community-Based Fisheries Management Groups (CBFMGs) formed in 4 selected fishing communities received technical assistance in supplementary livelihoods activities (snail farming and bee-keeping) by the project during the project implementation period.							
16	Score, in percent, of combined key areas of organization capacity amongst USG direct and indirect local implementing partners	0	95	92.67	97.55	No	

No.	Indicator	Baseline	Life of Project target	Performance achieved (actual)	Performance achieved in (%)	On target? Yes/No	
Comments: Africa Lead conducted an Organizational Capacity Assessment for DFAS and CCM. The assessment covered 8 major areas; 1) Governance 2) Administration 3) Human Resources 4) Financial Management 5) Organizational Management 6) Program Management 7) Network Capacities and 8) Policy Analysis and Advocacy and arrived at a total score of 80.33% as the combined key areas of organization capacity. This assessment was conducted in FY 2016. In FY 2019, the final assessment was conducted to measure the progress of DFAS and CCM in all 8 areas. The result for the final OCA was 92.67 % as against 80.33 % from the beginning of the project.							
17	Number of beneficiaries receiving improved infrastructure services due to USG assistance	0	150	243	162	Yes	
Comments: Beneficiaries include students and staff of DFAS, sister departments and units in the University of Cape Coast. Infrastructure services include refurbished offices, library, conference rooms, laboratory and vehicles.							
18	Number of new research collaborations established between USG-supported beneficiaries and other institutions	0	10	15	150	Yes	
Comments: This includes research collaborations established with departments in UCC as well as national and international organizations.							
19	Number of scientific studies published or conference presentations given as a result of USG assistance for research programs	0	10	86	860	Yes	
Comments: A few publications have been produced as a result of USG assistance but a greater portion of data feeding into this indicator was from conference presentations given as a result of USG assistance.							
20	Number of dialogues and stakeholder consultations held on fisheries and coastal management	0	20	18	90	No	
Comments: The number of planned dialogues and stakeholder consultations could not be achieved.							

No.	Indicator	Baseline	Life of Project target	Performance achieved (actual)	Performance achieved in (%)	On target? Yes/No	
21	Percentage of graduates from USG-supported tertiary education programs employed	0	50	11	30.56	No	
Comments: Since the inception of the FCMCBSP, only three 11 (5 MPhil and 6 PhD) graduates supported by the project have been successfully employed. Some are temporary employment whereas others are permanent employment. It is expected that more graduates can be employed in relevant fisheries and coastal sectors as most of them recently completed their studies.							
22	Number of CSOs and government agencies strengthened	0	25	30	120	Yes	
Comments: Representatives of CSOs and government agencies are strengthened through their participation in the GIS, Fisheries Management, Climate Change and Integrated Coastal Management short courses.							
23	Total number of direct beneficiary	0	800	1,384	173	Yes	
Comments: Since the beginning of the project, 1,384 individuals have benefited from activities such as organization of short course trainings, special trainings, support for undergraduate and postgraduate training, provision of technical and financial assistance to implement supplementary livelihood activities, refurbishment of office spaces, library, conference room, laboratory and procurement of vehicles and two conferences on Fisheries and Coastal Environment. Staff employed on the project as well as support staff of the University of Cape Coast were also counted.							

ANNEX IV. FIELD WORK

Table 8. Final Evaluation Schedule

Dates and Time	Interview	Institution	# of Participants
Phase I: Pre-Planning			
September 2019-November 14	-Preparation of draft SWs -Prepare successive drafts of preliminary work plan (before contracting) -Team Leader has initial call with the FCMCBSP M&E Support to discuss how to work together on finalizing work plan, methodology and stakeholder list		
November 14-November 25	Work with M&E Support and M&E Coordinator to: (1) identify and organize critical documentation; (2) to finalize the stakeholder lists and develop a stakeholder matrix for the online interviews; (3) develop and review the preliminary draft questionnaires and guides based on the concepts presented in the preliminary work plan; (4) develop a cover memo for the FCMCBP M&E Coordinator to email to stakeholders about their availability to be interviewed; and (5) confirm email addresses and telephone contact information for draft stakeholder list		
November 25-December 4	-FCMCBSP staff develops a model for evaluation pre-planning that includes (1) detailed follow-up on beneficiary lists to create summary tables for the evaluation team; (2) documentation system which includes a bibliography of the materials for the evaluation team -Draft revised workplan submitted to METSS II and USAID December 4 including revised dates due to delay in procurement		
December 4-21	Work with FCMCBSP M&E Support, M&E Coordinator, and Project Manager to: (1) finalize draft interview schedule; and (2) finalize contracting.		
Phase II: Fieldwork in Ghana			
January 13 (Monday)	Accra		
08:30-10:00	Meeting with METSS Project Coordinator to review power point	METSS	
10:00-12:00	Meeting with National Consultants to discuss logistics and contracts	METSS	

Dates and Time	Interview	Institution	# of Participants
14:00-16:00	Review work plan and timeline for deliverables with METSS and Project Team	METSS	
16:00-19:00	FGD work plan review session	USAID	
19:00-20:00	Preparation of draft SOW for Technical Advisor	METSS/UCC	
January 14 (Tuesday)	Accra		
07:00-10:00	Travel from Accra to Cape Coast and review of schedule and the evaluation questions	UCC	
10:00-12:00	FGD Former UCC undergraduate students who worked with the project	UCC	5
10:00-19:00	Preparation of survey forms and initial pilot of questions		
15:00-19:00	Project Board Members	UCC	8
January 15 (Wednesday)	Cape Coast		
08:00-09:30	FGD with Hen Mpoano (at their office in Takoradi)	Hen Mpoano (National NGO)	5
10:00-11:30	FGD with Friends of the Nation (at their office in Takoradi)	Friends of the Nation (National NGO)	3
12:30-14:00	FGD with former Assistant Director of CSLP (at Goshen Global Vision in Takoradi)	CSLP	1
15:00-17:00	Regional MoFAD and other regional partners (at the MoFAD office)	MoFAD	4
09:00-21:00	Formal launch of survey after additional tests of survey and review of email addresses and additional discussion with project M&E Specialist		
January 16 (Thursday)	Western Region		
09:00-11:00	FGD Ecological Wetland Monitoring school club in the Western region	Azulenoanu community school	6 adults + 40 children
14:00-16:00	FGD Livelihood case study interviews (Anlo Beach)-FGD with District assembly members	Shama District assembly	8
17:00-18:00	FGD Livelihood case study interviews (Anlo Beach)-community based interviews	Anlo beach bee rearing livelihood group	9
January 17 (Friday)	Central Region		
09:30-11:30	FGD Ecological Wetland Monitoring school club in the Central region- Gamoa Dago (beneficiaries, teachers, local leaders)	Ecological Wetland Monitoring	21

Dates and Time	Interview	Institution	# of Participants
		school club in the Central region- Gamoa Dago	
13:00-16:00	FGD with the only Ekumfi District Assembly member who worked with the project's livelihood activities in Narkwa	Narkwa District Assembly	1
16:00-18:00	FGD with Core Project Staff	UCC Fisheries Project Staff	6
18:00-20:00	Meet with Project Director to revise and finalize SOW for evaluation Technical Advisor		
January 18 (Saturday)	Central Region		
07:00-12:00	KII livelihood case study interviews (Narkwa)- community based interviews	Narkwa snail rearing livelihood group	1
09:00-15:00	Monitor survey and organization of documentation; review of focus groups. Sent follow-up emails.		
January 20 (Monday)	Cape Coast		
09:00-10:30	FGD with faculty of Grant Recipient universities	KNUST	10
11:00-12:30	FGD with faculty of Grant Recipient universities	UG	4
13:00-14:30	FGD with faculty of Grant Recipient universities	UENR	4
15:00-16:30	FGD with faculty of Grant Recipient universities	UDS	5
09:00-17:00	Follow up calls to beneficiaries to complete surveys and data cleaning		
January 21 (Tuesday)			
08:00-10:00	FGD with consultant (Developed Coastal Management short course) and consultant on the fisheries management short course		2
10:00-12:30	FGD with two specialists (both women) from the great Accra regional Fisheries Commission who were trained by the SFMP	Fisheries Commission	2
13:00-16:00	FGD with three member of GITA	GITA	3
16:00-18:00	Joint planning meeting with senior project staff	UCC	
08:30-18:00	Follow up calls to beneficiaries to complete surveys and data cleaning		
January 22 (Wednesday)			
08:30-10:00	FGD with SFMP staff).	SFMP	3[100]

[100] Actual interview with Dr. Crawford took place on 21st Jan via Skype

Dates and Time	Interview	Institution	# of Participants
10:30-12:00	Breakfast with media groups (	Media organizations	9
13:30-15:00	KII with consultant for livelihood activity		1
15:30-17:00	KII with consultant who lead the governance policy research as well as the conference, the society, and the journal	UG	1
08:00-18:00	-Follow up calls and emails to beneficiaries to complete surveys and data cleaning -Collate data from FGDs		
January 23 (Thursday)			
08:30-11:00	FGD with USAID Team	USAID	3
1130-12:30	FGD Fisheries Commission meeting (national level at their office)	Fisheries Commission	7
14:00-15:00	Review and collation of notes taken from FGDs		1
15:00-16:30	KII with the consultant who developed the FY2017 business plans for the laboratory and the short term training		1
16:00-17:00	KII with FCMCBSP staff member about sustainability plans		
17:15-18:30	FGD Consultant - Marine Fisheries Governance issues (multiple contracts) –	Inchu Airsy Co Ltd, University of Ghana	1
14:00-17:00	Audit survey results received Collate FGD responses File FGD responses Reviewed FGD responses		
January 24 (Friday)	Cape Coast		
08:00-09:00	KII with accounting staff (Enoch) to discuss project contract	UCC	1
09:00-11:00	FGD DFAS, CCM faculty	UCC	8
11:00-13:00	FGD with Postgraduate students	UCC	8
14:00-15:00	KII ATL FM (media group) for FGD	ATL	1
16:00-17:00	KII Consultant for the GIS training and organization of all the trainings	Nature Today	1
17:00-18:30	KII with faculty member who backstopped the snail livelihood community-based activities	UCC	1
January 25 (Saturday)			
9:00-17:00	FGD FCR Meeting with Senior FCMCBSP Staff		

Dates and Time	Interview	Institution	# of Participants
January 27 (Monday)			
	-FGD with Vice Chancellor, the Registrar and the Director of the Development Office -Review/update with senior staff		
January 28 (Tuesday)	Accra		
	-Continue working on the FCR -Complete preliminary analysis of the FGD/KIIs and the online survey		
January 29 (Wednesday)			
	Prepare the USAID/G Presentation and documentation for departure.		
	USAID/Ghana Debriefing		10
Phase III: Write-up	US		
February 3-28	-Write up -Collaboration with team on preparation of the CCM history --Collaboration with the technical advisor and the FCMCBSP on preparation of the technical review - Submission of first draft to METSS II Project Coordinator		

Source: FCMCBSP Final Performance Evaluation Team, January 2020.

Table 9. Stakeholder List Totals from Which Sample Was Drawn, Revised Stakeholder List from Which Sample Was Drawn, Number of People Included in the Interviews, and Total Number of People Interviewed for Each Stakeholder Category and Sub-Category in the FCMCBSP Final Performance Evaluation

Stakeholder Category	Proposed Samples for Data Collection Using KIIs	Proposed Samples for Data Collection Using FGDs	Proposed Samples for Data Collection Using Email Questionnaires	Initial Stakeholder List Totals From Which Sample Drawn[101*]	Final Stakeholder List From Which Sample Drawn (verified by the consultants)	# of People Included in KII/FGD	# of People Included in Questionnaire	# of People in Each Category Interviewed Totals (without double counting)
Stakeholder Category 1: Project staff, oversight committees, and administrators (total)							*21 all*	*31 all*
A. Full-time staff paid by the project		1	4 current + 5 former staff=9	4 current + 5 former=9	23 (combined for Categories 1.A, 1.B, and 1.C)	6	10	
B. Project Management Team (faculty + staff)		1	3	3 (+ 2 of which are also in category A)	*See above*	7	2	
C. PMB		1	9	9	*See above*	8	9	
D.1. Technical consultants	4			17 [102]		5		

[101] Based on the initial list of verified lists prepared by the project.
[102] Some double counting of staff in other categories.

Stakeholder Category	Proposed Samples for Data Collection Using KIIs	Proposed Samples for Data Collection Using FGDs	Proposed Samples for Data Collection Using Email Questionnaires	Initial Stakeholder List Totals From Which Sample Drawn[101*]	Final Stakeholder List From Which Sample Drawn (verified by the consultants)	# of People Included in KII/FGD	# of People Included in Questionnaire	# of People in Each Category Interviewed Totals (without double counting)
(contracted to execute activities)								
D.2. Consultants executing short courses (not contracts; per diem only)				25 [103]		3[104]		
Stakeholder Category 2: Government agencies (includes local, regional, and national government agencies)							*73 all*	*92 all*
2.A. District/municipal level (total)		4	101	191 in 38 municipalities and districts	147	9	42	
2.B. Regional level (total)	2	4	39	50 in 8 regions		4	24	

[103] Some double counting of staff in other categories.
[104] Two short course consultants and the training/GIS training consultant.

Stakeholder Category	Proposed Samples for Data Collection Using KIIs	Proposed Samples for Data Collection Using FGDs	Proposed Samples for Data Collection Using Email Questionnaires	Initial Stakeholder List Totals From Which Sample Drawn[101*]	Final Stakeholder List From Which Sample Drawn (verified by the consultants)	# of People Included in KII/FGD	# of People Included in Questionnaire	# of People in Each Category Interviewed Totals (without double counting)
2.C. National level (total)		1	16	20		9	4	
2.D. 3 government researchers attached to other CCM were included in this Category 3[105]							3	
Stakeholder Category 3: Academic and research institutions (total)								*39 all*
3.A. Principal partner UCC		8	121 (30 faculty, 44 graduate students, 47 undergraduates)	174	44	22[106]	*23 all*	26
3.B. Secondary partners in		4		51 (17 faculty, 6 researchers,	N/A	23[107]		23

[105] UCC and faculty only. Due to the high number of surveys being sent to the graduate students and undergraduates by DFAS and the CCM, the evaluators were advised to not send a separate questionnaire to them.
[106] Faculty: 7; Undergrads: 5; VC and senior managers: 3; Graduate students: 7
[107] KNUST: 10; UENR: 4; UDS: 5; UG: 4.

Stakeholder Category	Proposed Samples for Data Collection Using KIIs	Proposed Samples for Data Collection Using FGDs	Proposed Samples for Data Collection Using Email Questionnaires	Initial Stakeholder List Totals From Which Sample Drawn[101*]	Final Stakeholder List From Which Sample Drawn (verified by the consultants)	# of People Included in KII/FGD	# of People Included in Questionnaire	# of People in Each Category Interviewed Totals (without double counting)
Ghana (UG, UDS, UENR, KNUST)				28 undergraduate students)				
Stakeholder Category 4: Other USAID-funded fisheries projects								4 (all)
4.A. SFMP (2014-2019)		1		N/A		3		
4.B. CSLP (2013-2018)		1		N/A		1		
Stakeholder Category 5: Local communities, CBOs, and resource users								
5.A. Community-based activities (case studies)								*77 (all)*
5.A.1. Livelihood activities	1	3 (in 2 communities)		4 communities	N/A	9		

Stakeholder Category	Proposed Samples for Data Collection Using KIIs	Proposed Samples for Data Collection Using FGDs	Proposed Samples for Data Collection Using Email Questionnaires	Initial Stakeholder List Totals From Which Sample Drawn[101*]	Final Stakeholder List From Which Sample Drawn (verified by the consultants)	# of People Included in KII/FGD	# of People Included in Questionnaire	# of People in Each Category Interviewed Totals (without double counting)
5.A.2. Ecological monitoring of wetlands		6		2 schools; 10 teachers 2 communities		68		
5.B. NGO partners (that participated in short-term training and conferences)								*15 all*
		2 with NGOs included in the wetlands case studies (5.A.2)	10 (focal persons)	21 [108] from 8 NGOs	12	8	*9 all* (including producer groups)	
5.C. Fisheries producer group/unions								3
		1	5	Over 20 [109]		3	*See above*	

[108] People who participated in training and conferences. This does not include the wider interactions of the project with Hen Mpoano and Friends of the Nation, which collaborated on the ecological health monitoring using school clubs and communities activity.
[109] Numbers still being calculated

Stakeholder Category	Proposed Samples for Data Collection Using KIIs	Proposed Samples for Data Collection Using FGDs	Proposed Samples for Data Collection Using Email Questionnaires	Initial Stakeholder List Totals From Which Sample Drawn[101*]	Final Stakeholder List From Which Sample Drawn (verified by the consultants)	# of People Included in KII/FGD	# of People Included in Questionnaire	# of People in Each Category Interviewed Totals (without double counting)
Stakeholder Category 6: Media								*18 all*
		2	21	21 outlets/stations (70 people)	50	10	*all*	
Stakeholder Category 7: USAID AOR/Contracting Officer's Representative (COR) for the project (past and present)								3
		1		3		3		
TOTAL	7	41	334		276	194	143	305

Source: Della E. McMillan, Lynn Hurtak, and Annie Dela Akanko. 2019. FCMCBSP Final Evaluation. Accra, Ghana; and Monitoring, Evaluation, and Technical Support Services (METSS) II Project from M&E Support Joshua Adotey, based on project records and verification of email addresses. December 1, 2019.

Table 10. List of People Interviewed in the FCMCBSP Final Evaluation Focus Group Discussions and Key Informant Interviews, January 2020

N°	First and Last Name	Organization	Function/Role	Category[110]
1	Mark Newton	USAID	COR	7
2	Susan Bonney	USAID	AOR - Current	7
3	Ellis Ekekpi	USAID	M&E focal point	7
4	Justice Yeboah	UCC	Teaching Assistant	3
5	Samuel Ayitey	UCC	Teaching Assistant	3
6	Elizabeth Agyekumwaa	UCC	Teaching Assistant	3
7	Alex Boateng Asomaning	UCC	Teaching Assistant	3
8	Benjamin D Gawornu	UCC	Teaching and Research Assistant	3
9	Prof. Denis Worlanyo Aheto	UCC	Board member	1
10	Dr. Noble K. Asare	UCC	Board member	1
11	Mr. Samuel Akuamoah-Boateng	UCC	Board member	1
12	Mr. Nicholas Ampofo	UCC	Board member	1
13	Prof. John Blay	UCC	Board member	1
14	Prof. Kobina Yankson	UCC	Board member	1
15	Eric Awotwi	UCC	College Finance Officer	1
16	Enoch Enchill Essoun	UCC	Accounts	1
17	Stephen Kankam	Hen Mpoano	Deputy Director	5
18	Cephas Asare	Hen Mpoano	Program Officer	5
19	Justice Camillus	Hen Mpoano	Program Officer	5
20	Adiza Ama Owusu	Hen Mpoano	Program Officer	5
21	Robert Allou	Hen Mpoano	Finance and Admin Manager	5
22	Donkris Mevuta	Friends of the Nation	Executive Director	5
23	Philip Prah	Friends of the Nation	Project Officer	5
24	Kyei K. Yamoah	Friends of the Nation	Program Manager	5
25	Emmanuel Ntiri	CSLP	Assistant Director	4

[110] Category 1: Project staff, oversight committees, and administrators; Category 2: Government agencies (local, regional, and national government agencies); Category 3: Academic and research institutions; Category 4: Other USAID-funded fisheries projects; Category 5: Local communities, CBOs, and NGO partners that benefitted from training; fisheries producer groups/unions and resource users (four district-level interventions); Category 6: Media; and Category 7: USAID/AOR/COR for the project (past and present).

N°	First and Last Name	Organization	Function/Role	Category[110]
26	Godfrey Baidoo-Tsibu	MoFAD	MoFAD Staff	2
27	Alhassan Arafat	MoFAD	MoFAD Staff	2
28	Patrick Tawiah	MoFAD	MoFAD Staff	2
29	Emmanuel Kojo Owusu	MoFAD	MoFAD Staff	2
30	Patrick Blay	Eco. Wetland Monitoring School Club-Azulenoanu Community School (Western Region)	Class Teacher (VSLA, Uit Committee member)	5
31	John Ofori Blay	Eco. Wetland Monitoring School Club-Azulenoanu Community School (Western Region)	Assistant Headteacher	5
32	Clentis Apeko Donkor	Eco. Wetland Monitoring School Club-Azulenoanu Community School (Western Region)	Class Teacher	5
33	Peter Ackah	Eco. Wetland Monitoring School Club-Azulenoanu Community School (Western Region)	Class Teacher	5
34	Grace Konadu Appiah	Eco. Wetland Monitoring School Club-Azulenoanu Community School (Western Region)	Class Teacher	5
35a	James Eru	Eco. Wetland Monitoring School Club-Azulenoanu Community School (Western Region)	Headmaster (SHS)	5
35b	Azulenuanu Community School Students[111]	Azulenuanu Community School (Western Region)	Students	5
36	Sammuel Baidoo Jnr	Shama District Assembly	Report Writer	2
37	Michael Agyei	Shama District Assembly	Ag. Head	2
38	Ahaji Adu Mahama	Shama District Assembly	District Officer (Planning Unit)	2
39	Peter Doh Afetsu	Shama District Assembly	Assistant Physical Planning Officer	2
40	E Aboagyeh-Aggrey	Shama District Assembly	District Director of Agric	2
41	Emmanuel Nana Lartel	Shama District Assembly	District Budget Analyst	2
42	Richard Blevi	Shama District Assembly	District Coordination Director	2
43	Emmanuel Kudor	Shama District Assembly	District Environmental Health Officer	2
44	Cephas Kwesi	Anlo Beach Livelihood Group	Secretary	5

[111] Forty students participated in the discussion, but their names were not recorded.

N°	First and Last Name	Organization	Function/Role	Category[110]
45	Nobel Dogbatse	Anlo Beach Livelihood Group	Treasurer	5
46	Togbe Tekple Garikor	Anlo Beach Livelihood Group	Chief	5
47	Kennedy Attipoe	Anlo Beach Livelihood Group	Organizer	5
48	Enyonam Cledo	Anlo Beach Livelihood Group	Member	5
49	Mercy Dziwornu	Anlo Beach Livelihood Group	Member	5
50	Simon Atriatormeh	Anlo Beach Livelihood Group	Member	5
51	Emmanuel Kalepe	Anlo Beach Livelihood Group	Member	5
52	Francis Bolu	Anlo Beach Livelihood Group	Member	5
53	Francis Acquah	Eco. Wetland Monitoring School Club (Central Region)	Student	5
54	Agartha Arthur	Eco. Wetland Monitoring School Club (Central Region)	Student	5
55	Ransford Gyaaben	Eco. Wetland Monitoring School Club (Central Region)	Under Training	5
56	Rose Kaayah	Eco. Wetland Monitoring School Club (Central Region)	Student	5
57	Mercy Gyapson	Eco. Wetland Monitoring School Club (Central Region)	Student	5
58	Peter Kweku Musah	Eco. Wetland Monitoring School Club (Central Region)	Student	5
59	Kwansa Abbiw Eshun	Eco. Wetland Monitoring School Club (Central Region)	Student	5
60	John Wilson	Eco. Wetland Monitoring School Club (Central Region)	Under Training	5
61	Joseph Otsibu	Eco. Wetland Monitoring School Club (Central Region)	Student	5
62	Rejoice Nyanu	Eco. Wetland Monitoring School Club (Central Region)	Teacher	5
63	Kester Acquah	Eco. Wetland Monitoring School Club (Central Region)	Head teacher	5
64	S.K. Saw	Eco. Wetland Monitoring School Club (Central Region)	SMC Chairman	5
65	E.B. Chartey	Eco. Wetland Monitoring School Club (Central Region)	PTA Chairman	5
66	Nana Bobo Ewusi-Tawiah	Eco. Wetland Monitoring School Club (Central Region)	Opinion Leader (Chief)	5
67	Rosemary Ehyiusah Narh	Eco. Wetland Monitoring School Club (Central Region)	Student	5
68	Elizabeth Apeteh	Eco. Wetland Monitoring School Club (Central Region)	Student	5

N°	First and Last Name	Organization	Function/Role	Category[110]
69	Emmauel Ansah Ofosu	Eco. Wetland Monitoring School Club (Central Region)	Teacher	5
70	Isaac Kojo Arkorful	Eco. Wetland Monitoring School Club (Central Region)	Teacher	5
71	Ruth Sakyi	Eco. Wetland Monitoring School Club (Central Region)	Teacher	5
72	Solomon Akwatia	Eco. Wetland Monitoring School Club (Central Region)	Teacher	5
73	Emmanuel K Mensah	Eco. Wetland Monitoring School Club (Central Region)	Teacher	5
74	Paul Freku	Eco. Wetland Monitoring School Club (Central Region)	Student	5
75	Rexford Ofosuhene	Ekumfi District Assembly	Head, Business Advisory Center	2
76	Esinam Attipoe	USAID/Ghana UCC Project	Project Management Support	1
77	Ivy S.G. Akuoko	USAID/Ghana UCC Project	Principal Research Assistant	1
78	Ernest O. Chuku	USAID/Ghana UCC Project	Principal Research Assistant	1
79	Evans K. Arizi	USAID/Ghana UCC Project	Principal Research Assistant	1
80	Joshua Adotey	USAID/Ghana UCC Project	Monitoring and Evaluation Support	1
81	Sika Abrokwah	USAID/Ghana UCC Project	Principal Research Assistant	1
82	Dr. Sam Addo	UG	Head of Dept Marine and Fisheries Science	3
83	Dr. Ben Botwe	UG	Lecturer	3
84	Mr. Nana Frempong Manso	UG	Student, Beneficiary undergrad	3
85	Ms. Zainab Umar Mohammed	UG	Student, Beneficiary undergrad	3
86	Dr Akwasi Ampofo Yaboah	UDS		3
87	Daniel Nsoh	UDS		3
88	Frida Safo	UDS		3
89	Nicholas Darku	UDS		3
90	Annane Kwabena	UDS		3
91	Dr. Berchie Asiedu	UENR	UENR, Fisheries and water resources department.	3

N°	First and Last Name	Organization	Function/Role	Category[110]
92	Dr. SeyramSarah B. Setufe	UENR	UENR, Fisheries and water resources department	3
93	Samuel K.K. Amponsah	UENR		3
94	Richard Klutse	UENR	Lecturer tenured	3
95	Ehud Sarfo Adusei-Kwaoboadu	KNUST	Student	3
96	Kumah Mabel	KNUST	Student	3
97	Anthea Georgina Ama Ofori	KNUST	Student	3
98	Johnmark Nyame Acheampong	KNUST	Student	3
99	Sophia Sedem Owuodihia	KNUST	Student	3
100	Onwonah-Owiredu Daniel	KNUST	Student	3
101	Prof. Daniel Adjei-Boateng	KNUST	Lecturer	3
102	Prof. Nelson Winston Agbo	KNUST	Lecturer	3
103	Dr. Regina Edziyie	KNUST	Lecturer	3
104	Dr. Kwasi Adu Obirikorang	KNUST	Lecturer	3
105	Dr. Kofi Abban	Coastal Management Consultancy	Consultant	1
106	Francis Nunoo	Fisheries Management Consultancy	Consultant	1
107	Rosina Williams	Fisheries Commission	Senior Fisheries Manager	2
108	Samantha Vida Osei	Fisheries Commission	Senior Fisheries Research Manager	2
109	Jerome Deamesi	GITA	Association member	5
110	Kate Ansah	GITA	Association member	5
111	Richster N. Amarh Amarfio	GITA	Association member	5
112	Dr Raymond Babanawo	SFMP	Chief of Party	4
113	Enoch Ebo Appiah	SFMP	Deputy Chief of Party	4
114	Brian Crowford	SFMP	Project Manager	4
115	Emelia Ennin	Daly Graphic	Media Person	6
116	Joyce Gyekye	Gyekye	Media Person	6
117	Lydia Kukua Asamoah	Ghana News Agency	Media Person	6

N°	First and Last Name	Organization	Function/Role	Category[110]
118	Noami Henrietta Badasu	Kekeli/Jubilee	Media Person	6
119	Peter Quao Adattor	TV3	Media Person	6
120	Jonathan Ofori	Twin City FM	Media Person	6
121	Gabriel Ahiagbor	Daily Graphic	Media Person	6
122	Francisca Arhin	GH One TV	Media Person	6
123	Edzorna F Mensah	GBC online	Media Person	6
124	Abena Acheampong	Livelihood Consultancy	Livelihood Consultant	1
125	Benjamin Campion	Policy Consultancy	Policy Consultant	1
126	Yaa Tiwaa Amah	Fisheries Commission	Principal Fisheries Manager	2
127	Richner Odonkor	Fisheries Commission	Principal Fisheries Manager	2
128	Matilda Quist	Fisheries Commission	Head Marine Fisheries Management Division	2
129	Rebecca Sackey-Mensah	Fisheries Commission	Senior Fisheries Manager	2
130	Samuel D. Manu	Fisheries Commission	Head Post-Harvest	2
131	Hayford Agbekpornu	Fisheries Commission	Snr. Planner (M&E)	2
132	Kofi Amador	Fisheries Commission	Head, Fisheries Scientific Survey Division	2
133	Jacob Ainoo-Ansah	Business Plan Consultancy	Business Plan Consultant	1
134	George Darpaah	Marine Fisheries Consultancy	Marine Fisheries Consultant	1
135	Enoch Enchill Essuon	UCC	Directorate of Finance	1
135	Paul Mensah	UCC (DFAS)	Lecturer	3
136	Thomas Davis	UCC (DFAS)	Principal Technician	3
137	Prosper Dordunu	UCC (DFAS)	Senior Lab Technician	3
138	Kwadwo Mireku	UCC (DFAS)	Lecturer	3
139	Donatus Angnuureng	UCC (CCM)	Lecturer	3
140	Precious Mattah	UCC (CCM)	Research Fellow	3
141	Joseph Debrah	UCC (DFAS)	Senior Lecturer	3
142	Alberta Jonah	UCC	Ph.D. Candidate	3
143	Michele Clottey	UCC	Ph.D. Candidate	3
144	Success Sowah	UCC	M.Phil. Student	3
145	Ebenezer Kpelly	UCC	Ph.D. Candidate	3
146	Isaac Osei	UCC	Ph.D. Candidate	3
147	Eugenia Amador	UCC	M.Phil. Student	3
148	Lesley Ntim	UCC	Ph.D. Candidate	3
149	Mary Ama Bawa	ATL Radio	Deputy Editor	6

N°	First and Last Name	Organization	Function/Role	Category[110]
150	Cynthia Okine	Nature Today	Training Consultant	I
151	Prof. Kweku Monney	UCC	Snail Consultant	I
152	Prof Joseph Ghartey Ampiah	UCC	Vice Chancellor	I
153	Mr Philip Ntim	UCC	Head, Physical Development	I
154	Mr. John Kofi Nyan	UCC	Registrar	I

Source: FCMCBSP Evaluation Team

Table 11. Summary Responses to Major FGD Questions by Different Stakeholder Groups

	Questions	Staff (x/8)	Government (x/4)	Academic and Research Institutions (x/7)	Other USAID-Funded Fisheries Projects (x/2)	NGOs/ Producer Groups (x/3)	Media (x/2)	USAID (x/1)
	EQs 1 & 2							
1.a	EQ 1.a. Organizational and human capacity (at your institution) has been strengthened as a result of the improved infrastructure and the increased technical and scientific knowledge generated by the USAID/UCC Fisheries Project (rank 1-7)[112] in the principal areas targeted by the project:	4 5 6 7	1 4 4 5	4 6 7 7	6 7	4 5 6		6
2.A.	EQ 1.b. USAID/UCC Fisheries Project efforts to increase marine and coastal research and resource assessment and to strengthen the communication, extension, and outreach of marine and coastal research and resource assessment have increased information and knowledge for natural resource management **for your institution** (rank 1-7)	6 6 7 7 7	1 1 6	5 6 7 7	6 7	5 6 6		6.5&7
3.A.	EQ 1.b. Please rank the most effective methods of information-sharing that the project used to build the capacity of the staff and/or members of your organization. (rank 1-7)							
	a) Conferences	6 7 7	1 6 7	1 7 7 7 7 7	5 7	6 7 7	7	7
	b) Short courses	6 7 7	6 7 7	1 1 1 5 7 7	5 6	6 7 7	7	6.5
	c) Workshops	7 7	1 6 7	1 1 6 7 7 7	7 7	1 5	7	7
	d) Newspaper articles	4 5 5 7	1 1 6 7	1 1 4 4&5 7 7	6 6	5 5 7		6.5
	e) Communiqués (from the project's workshops and conferences)	5 7 7 7	1 1 6 7	1 1 5 7 7 7	7 7	5 6 7		7
	f) Social Media (WhatsApp, Twitter, Facebook)	4 7 7 7	1 5 6 6	1 5 6 6 7	7 7	6 6 6		6

[112] 7 strongly agree; 4 neither agree or disagree (no opinion); 1 strongly disagree; blank [will not answer]

	Questions	Staff (x/8)	Government (x/4)	Academic and Research Institutions (x/7)	Other USAID-Funded Fisheries Projects (x/2)	NGOs/ Producer Groups (x/3)	Media (x/2)	USAID (x/1)
	g) Radio and TV programs	5 7 7 7	1 6 6 6	1 1 6 7 7 7	6 7	5 6 6		7
	h) FishCoMGhana database	6 6 7 7	1 1 1 7	1 6 6 7 7 7	7		6	7
	i) Classroom instruction	4 7 7	1 6	1 6 6 6 7 7	1			7
	j) Journal of Fisheries and Coastal Management	6 6 7	1 1 4 5	1 6 6 7 7 7	6 7			7
	k) Fisheries and Aquaculture Society of Ghana	4 6 7	1 1 4 4	1 1 4 6 6 7	1 7			6
	l) UCC DFAS and CCM Websites	6 6&7 7	4 6	4 6 6 6&7 7	7			6
	m) Other academic journal publications	4 7	1 7	6 7	6			6
4.	The USAID/UCC Fisheries Project's activities have contributed the identification of important policy issues (rank 1-7)	7 7 7	1 6 7	6 6 6 7 7 7	7 7			7
5.	Policy makers have responded to some of the issues raised by the activities (rank 1-7)	5 6 7	1 7 7	1 5 5 5 7	7 7			6&6.5&7
	EQs 3 & EQ 4							
6	EQ 3. The USAID/UCC Fisheries Project's collaboration with the USAID-funded CSLP and SFMP, GoG Partners like MoFAD, and other donor projects and the private sector have helped strengthen the global capacity for sustainable fisheries and coastal resources management in Ghana? (rank 1-7)	7 7 7	1 5 6 7	5 6 6 7 7	4 7			7
7	EQ 4. The USAID/UCC Fisheries Project has effectively addressed the gender issues related to capacity building in sustainable fisheries and coastal resources management? Please rank what the group fields are the principle gender issues related to capacity building for these different groups.	5 7	1 5 6 7	1 5 5 6	6			6.5
	EQs 5 & 6							

	Questions	Staff (x/8)	Government (x/4)	Academic and Research Institutions (x/7)	Other USAID-Funded Fisheries Projects (x/2)	NGOs/ Producer Groups (x/3)	Media (x/2)	USAID (x/1)
8	EQ 5. To what extent are the USAID/UCC Fisheries Project's capacity strengthening interventions likely to continue after USG support? (rank 1-7)	5 6 6 6 6	1 4	1 5 5 6 6 6 6	4 6		6	6.5&7

Source: FCMCBSP Final Performance Evaluation FGDs, January 2020.

Table 12. Additional Summary Responses to Major FGD Questions by Different Stakeholder Groups; Most Effective Methods of Information Sharing to Build Capacity, Group Consensus on Rankings (1-7) for Stakeholder Group 3.A

Questions/Statements	PMB	Project Staff	Policy Consultant	Business Plan Consultant	Livelihoods Consultant	Marine Fisheries Consultant	Training Consultant	Snail Consultant
EQ 1.b. Please rank the most effective methods of information-sharing that the project used to build the capacity of the staff and/or members of your organization.								
a) Conferences	7	6	7					
b) Short courses	7	6	7					
c) Workshops	7	n/a	7					
d) Newspaper articles	4	5	5			7		
e) Communiqués (from the project's workshops and conferences)	7	7	5			7		
f) Social media (WhatsApp, Twitter, Facebook)	6	7	4			7		
g) Radio and TV programs	6	5	7			7		
h) FishCoMGhana database	7	6	6			7		
i) Classroom instruction	7	7				4		
j) Journal of Fisheries and Coastal Management	7	6				7		
k) Fisheries and Aquaculture Society of Ghana	5	4				7		
l) UCC, DFAS, and CCM websites	6.	6				7		
m) Other academic journal publications	6	4						
n) Other: Exchange visits		7						

Source: FCMCBSP Final Performance Evaluation FGDs, January 2020.

Table 13. Major Stakeholder Groups and Response Rate for the FCMCBSP Final Evaluation Online Questionnaire, Disaggregated by Gender

Stakeholder Group	Number of Questionnaires Sent	Number of Questionnaires Answered	Number of Males Who Answered	Number of Females Who Answered
Stakeholder Category 1: Project Staff, Oversight Committees and Administrators	23	21 (91%)	14	7
Stakeholder Category 2: Government Agencies (national, regional, district)	147	73 (50%)	55	18
Stakeholder 3: UCC Faculty and Researchers	44	23 (52%)	19	4
Stakeholder 5.B: NGOs and Producer Groups	12	9 (75%)	8	1
Stakeholder Category 6: Media	50	17 (34%)	9	8
TOTAL	276	143 (52%)	105 (73%)	38 (27%)

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 14. Question Asked of All UCC Staff, Administrators, and Researchers in the FCMCBSP Final Performance Evaluation Online Questionnaire

Question	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
My personal knowledge and skills have been strengthened as a result of the USAID/UCC Fisheries Project.	7	5	16	16	84% (37/44)

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 15. Questions Asked of All Government, NGOs/Producer Groups, and Media in the FCMCBSP Final Performance Evaluation Online Questionnaire

Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
The USAID/UCC Fisheries Project's capacity-building activities have improved MY PERSONAL TECHNICAL AND SCIENTIFIC KNOWLEDGE of the most critical issues related to fisheries and coastal resource management.	4	11	50	34	96% (95/99)
I expect to continue to use the skills and networks I acquired as a result of the project in the future	-	7	24	68	100% (99/99)

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 16. Questions Asked of All Participants (Stakeholder Groups 1, 2, 3.A, 5.B, and 6) in the FCMCBSP Final Performance Evaluation Online Questionnaire

Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
If you attended either/both conferences, please respond to this statement: The biennial conferences gave participants a forum to share knowledge and concerns	-	2	16	47	100% (65/65[113])
If you attended either/both conferences, please respond to this statement: The biennial conferences encouraged the government to implement policies that promote sustainable fisheries and coastal management.	8	9	17	32	88% (58/66)
If you attended either/both conferences, please respond to this statement: The USAID/UCC conferences have increased information and knowledge for natural resource management.	1	4	20	41	98% (65/66)
The Journal of Fisheries and Coastal Management contributes to information and knowledge for natural resource management.	18	11	57	57	87% (125/143)

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 17. Stakeholder Group 1: Project Staff, Oversight Committee, and Administrator Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Ranking Questions (x/21)

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
1	My personal knowledge and skills have been strengthened as a result of the USAID/UCC Fisheries Project.	-	3	9	9	100
2	The organizational and human capacity of the Department of Fisheries and Aquatic Sciences/Centre for Coastal Management (DFAS/CCM) at UCC has been strengthened as a result of the improved infrastructure and capacity building facilitated by the USAID/UCC Fisheries Project.	-	-	7	14	100
3	The organizational and human capacity of other UCC departments (not DFAS) has been strengthened as a result of the improved infrastructure and capacity building facilitated by the USAID/UCC Fisheries Project.	4	4	8	5	81
4	The organizational and human capacity of the UCC DFAS has been strengthened as a result of					

[113] There is a denominator of 65 for this question because one person who attended either/both conferences did not answer it.

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
	the increased technical and scientific knowledge generated by the USAID/UCC Fisheries Project in the areas of:					
	Fisheries management	1	2	11	7	95
	Coastal management	-	3	11	7	100
	Fish stock assessment (shell and fin fish)	1	6	9	5	95
	GIS and remote sensing	-	6	8	7	100
	Coastal ecosystems and biodiversity sciences	1	6	8	6	95
	Climate change studies	-	9	7	5	100
	Small undergraduate research grants	1	1	13	6	95
	Postgraduate scholarships	-	2	9	10	100
	J-term undergraduate student exchange program with the University of Rhode Island	1	4	7	9	95
	Academic/administrative and technical capacity strengthening activities	-	5	6	10	100
5	The USAID/UCC Fisheries Project has built the capacity of CCM for national and leadership in fisheries and coastal issues over the last 5 years.	-	2	6	13	100
7	The organizational and human capacity of the UCC DFAS has been strengthened as a result of the increased technical and scientific knowledge generated by the USAID/UCC Fisheries Project in the areas of:					
	Increased grantsmanship and donor funding of other institutional activities	-	1	10	10	100
	Student enrollment	1	3	10	7	95
	Quality of students enrolled	-	-	13	8	100
	Student participation in other institutional activities (donor projects and research)	1	3	11	6	95
	Quality and quantity of research	-	2	8	11	100
	Scope of research	-	2	10	9	100
	Quality and quantity of publications	1	2	11	7	95
9	If you attended either/both conferences, please respond to this statement: The biennial conferences gave participants a forum to share knowledge and concerns.	-	-	3	14	100 (17/17)
10	If you attended either/both conferences, please respond to this statement: The biennial conferences encouraged the government to implement policies that promote sustainable fisheries and coastal management.	1	3	6	7	94 (16/17)

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
11	If you attended either/both conferences, please respond to this statement: The USAID/UCC conferences have increased information and knowledge for natural resource management.	-	1	6	10	100 (17/17)
12	The Journal of Fisheries and Coastal Management contributes to information and knowledge for natural resource management.	-	1	8	12	100
13	USAID/UCC Fisheries Project's efforts to improve the communication, extension, and outreach of marine and coastal research and resource assessment has increased the dissemination of information and knowledge about the key issues facing fisheries and coastal resource management:					
	For the most important national-level policy institutions.	-	1	10	10	100
	For the most relevant regional Ministry offices in four regions (Central, Western, Volta, and Greater Accra)	2	3	10	6	90
	For the most relevant regional offices in two regions (Central and Western)	2	5	6	8	90
	For the most relevant regional and district offices in two regions (Central and Western)	2	5	6	8	90
14	The USAID/UCC Fisheries Project's M&E system provided consistent monitoring about the effectiveness of the project's communication, extension, and outreach activities in increasing information and knowledge for natural resource management:					
	At the national level	5	5	8	3	76
	At the regional level	6	4	9	2	71
	At the district level	7	3	9	2	67
15	The project's M&E system was adequate to track results and impact for the full five years of the project	6	5	9	1	71
17	The UCC Project Management Team has had adequate time to invest in the project activities.	3	1	9	8	86
19	The project's networks created with its regional partners (zonal fisheries commission, MoFAD, and district assemblies, etc.) are sustainable.	3	2	11	5	86
20	Project procurement systems contribute to timely processing of activities and equipment needed to achieve results.	10	4	5	2	52
22	UCC's accounting department has adequate staffing to support project activities and goals	6	4	8	3	71

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
24	The Centre for Coastal Management has adequate staff support to continue its mission once the project funding ends.	9	3	4	5	57
25	The USAID/UCC Fisheries Project's efforts to promote sustainable livelihood activities (i.e. snail farming, oyster farming, and beekeeping) for the community-based fisheries management groups has increased opportunities for income generation amongst the fisher families in the four targeted communities.	6	10	4	1	71
27	The USAID/UCC Fisheries Project's pilot on ecological monitoring of wetlands using junior high schools has promoted community-based monitoring of natural resources.	4	3	11	3	81
29	The USAID/UCC Fisheries Project support for livelihood activities has built the capacity of local community-based organizations to improve their advocacy, their ability to seek answers, and their ability to engage positively with local authorities in the governance of fisheries and coastal resources.	6	7	8	-	71
30	The USAID/UCC Fisheries Project's support for ecological monitoring of wetlands using junior high schools has built the capacity of local community-based organizations and the CSOs (Hen Mpoano and Friends of the Nation) to improve their advocacy, their ability to seek answers, and their ability to engage positively with local authorities in the governance of fisheries and coastal resources.	5	3	9	4	76
33	The USAID/UCC Fisheries Project's collaboration with the following projects and institutions has strengthened their capacity for sustainable fisheries and coastal resources management.					
	The USAID-funded SFMP	4	1	7	9	81
	The USAID-funded CSLP	5	5	6	5	76
	MoFAD (at all levels)	2	2	8	9	90
	Other government agencies (not MoFAD)	3	5	8	5	86
	Other donor-funded projects	4	3	9	5	81
	International NGOs working on environmental issues in Ghana	8	2	7	4	62
	National NGOs working on coastal resource management in Ghana	3	1	10	7	86
	Producer organizations in Ghana (like GITA)	6	4	6	5	71

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
35	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to capacity building in sustainable fisheries and coastal resources management.	2	5	7	7	90
36	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the capacity-building of STUDENTS at UCC.	-	1	4	16	100
37	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the capacity-building of the FACULTY at UCC.	7	5	2	7	67
38	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the capacity-building of the REGIONAL, DISTRICT, AND ZONAL OFFICES of the principal ministries involved in fisheries and coastal resource management.	9	5	3	4	57
39	The USAID/UCC Fisheries Project has effectively address the gender issues in its two community-based initiatives:					
	The project's livelihood activities	5	2	10	4	76
	The project's community-based wetlands management initiative using junior high schools	6	3	9	3	71
40	The following USAID/UCC Fisheries Project activities are likely to continue or be increased after the USAID funding ends					
	Improved libraries/computer rooms	3	1	7	10	86
	Improved laboratories	3	1	7	10	86
	Improved vehicles	4	4	6	7	81
	Short courses/ technical	3	2	8	8	86
	Short courses/ journalists	3	7	6	5	86
	Conferences	5	4	5	7	76
	Journal of Fisheries and Coastal Management	3	-	6	12	86
	Promote national-level policy dialogue	4	1	7	9	81
	Faculty capacity-building	3	3	8	7	86
	PhD/MPhil students research grants	4	3	7	7	81
	Undergraduate training	2	1	10	8	90
	Research	2	1	9	9	90

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 18. Stakeholder Group 1: Project Staff, Oversight Committee, and Administrator Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Choice Questions (x/21)

41. Choose what you consider to be the MOST effective USAID/UCC Fisheries Project activities. (Choose up to 5)	How many people chose
Renovating and equipping fisheries and coastal research laboratory	15
Refurbishing and equipping office/lecture/computer rooms and library	10
Acquisition of vehicles to support educational, training, research, and extension activities	9
Academic and technical staff capacity strengthening	5
Operationalization of the Centre for Coastal Management	14
Support for postgraduate (MPhil & PhD) training program	18
Undergraduate research grants and J-Term students exchange program	6
Conducting fisheries stock assessment	4
Conducting research and assessment on marine fisheries governance issues	-
Research on fish and shellfish of commercial value	1
Analysis of value chains of fish trade	-
Monitor the biodiversity and health of coastal ecosystems	2
Developing marine and coastal fisheries database	2
Developing material and conducting training on integrated coastal management	4
Developing material and conducting training on fisheries management	2
Developing manuals and updating training materials on climate change adaptation and mitigation	2
Developing material and conducting training on the use and application of Geographical Information Systems (GIS)	5
Engaging policy makers to address coastal and fisheries issues (including two national conferences and creation of a new online Journal of Fisheries and Coastal Management)	9
Building institutional partnerships and collaboration	1
Wetlands ecological health monitoring using school clubs and communities	2
Strengthening community-based groups	1
Promoting supplementary livelihoods in coastal communities	1
42. Choose what you consider to be the LEAST effective USAID/UCC Fisheries Project activities. (Choose up to 5)	**How many people chose**
Renovating and equipping fisheries and coastal research laboratory	1
Refurbishing and equipping office/lecture/computer rooms and library	-
Acquisition of vehicles to support educational, training, research, and extension activities	-
Academic and technical staff capacity strengthening	-
Operationalization of the Centre for Coastal Management	-
Support for postgraduate (MPhil & PhD) training program	-
Undergraduate research grants and J-Term students exchange program	1

Conducting fisheries stock assessment	1
Conducting research and assessment on marine fisheries governance issues	3
Research on fish and shellfish of commercial value	3
Analysis of value chains of fish trade	12
Monitor the biodiversity and health of coastal ecosystems	5
Developing marine and coastal fisheries database	-
Developing material and conducting training on integrated coastal management	-
Developing material and conducting training on fisheries management	-
Developing manuals and updating training materials on climate change adaptation and mitigation	2
Developing material and conducting training on the use and application of Geographical Information Systems (GIS)	-
Engaging policy makers to address coastal and fisheries issues (including two national conferences and creation of a new online Journal of Fisheries and Coastal Management)	1
Building institutional partnerships and collaboration	-
Wetlands ecological health monitoring using school clubs and communities	5
Strengthening community-based groups	15
Promoting supplementary livelihoods in coastal communities	18

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 19. Stakeholder Group 2: Government Agencies (Local, Regional, and National) Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Ranking Questions (x/73)

Q#	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
2	The USAID/UCC Fisheries Project's capacity-building activities have improved MY TECHNICAL AND SCIENTIFIC KNOWLEDGE of the most critical issues related to fisheries and coastal resource management.	3	7	40	23	96
4	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my personal network with OTHER EXPERTS IN MY MINISTRY/AGENCY who are working on fisheries and coastal resource management issues (in general).	10	12	28	13	86
5	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my personal network with GHANA'S LEADING EXPERTS on fisheries and coastal management in OTHER MINISTRIES/AGENCIES.	15	15	30	13	79
6	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my working relationship to FISHERIES AND COASTAL	11	19	25	18	85

Q#	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
	MANAGEMENT EXPERTS in the University of Cape Coast.					
7	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my working relationship to other UCC departments NOT RELATED TO FISHERIES AND COASTAL RESOURCE MANAGEMENT.	33	25	9	6	55
10	If you attended either/both conferences, please respond to this statement: The biennial conferences gave participants a forum to share knowledge and concerns.	-	1	4	9	100 (14/14)
11	If you attended either/both conferences, please respond to this statement: The biennial conferences encouraged the government to implement policies that promote sustainable fisheries and coastal management.	3	1	3	8	80 (12/15)
12	If you attended either/both conferences, please respond to this statement: The USAID/UCC conferences have increased information and knowledge for natural resource management.	1	-	5	9	93 (14/15)
13	The Journal of Fisheries and Coastal Management contributes to information and knowledge for natural resource management.	12	8	30	23	84
14	The USAID/UCC Fisheries Project's capacity-building activities have increased the quality of my Ministry/agency's SUPPORT to fisheries and coastal management issues (i.e., it improved our ability to solve problems related to fisheries and coastal resource management).	16	9	28	20	78
16	The COLLEAGUES from my Ministry/agency who participated in the USAID/UCC Fisheries Project's capacity-building activities have used that information to build the capacity of other colleagues.	16	13	28	16	78
20	I expect to continue to use the skills and networks I acquired as a result of the USAID/UCC Fisheries Project in the future.	-	6	19	48	100

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 20. Stakeholder Group 2: Government Agencies (Local, Regional, and National) Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Choice Questions (x/73)

1. What USAID/UCC Fisheries Project capacity-building activities did you and other members of your government agency participate in?	How many people chose
Short courses	66
Workshops	12

Conferences	9
Technical backstopping	3
Research activities	6
Policy formulation review	3
Other: Introductory GIS Training	1
3. Which issues did you learn more about?	**How many people chose**
Fisheries management	26
Coastal management	38
Fish stock assessment (shell and fin fish)	8
GIS and remote sensing	20
Climate change studies	22
17. How many existing or new initiatives in your Ministry/agency have been influenced by the capacity-building support that you or your colleagues personally received from the USAID/UCC Fisheries Project?	**How many people chose**
None	22 (30%)
1-5	45 (62%)
6-10	3 (4%)
11 or more	3 (4%)
21. What do you feel were the MOST effective USAID/UCC Fisheries Project capacity-building activities that you participated in?	**How many people chose**
Short courses	66
Workshops	15
Conferences	7
Technical backstopping	4
Research activities	9
Policy formulation review	4
Other: Introductory GIS Training	1
Other: Participated only in short course	1
22. What do you feel were the LEAST effective elements of these USAID/UCC Fisheries Project activities (i.e., areas that need strengthening in the future)?	**How many people chose**
Short courses	20
Workshops	7
Conferences	9
Technical backstopping	12
Research activities	16
Policy formulation review	16
Other: Participated only in short course	6
Other: None	4

Other: Was not part of policy formulation review	1
Other: Course duration was short	1
Other: Practical side of training	1

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 21. Stakeholder Group 2: Government Agencies (Local, Regional, and National) Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Yes/No Question (x/73)

Question	Yes	No
8. I am a member of the project-created Fisheries and Aquaculture Society of Ghana.	3	70

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 22. Stakeholder Group 3.A: UCC Faculty and Researcher Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Ranking Questions (x/23)

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
1	My personal knowledge and skills have been strengthened as a result of the USAID/UCC Fisheries Project.	7	2	7	7	70
6	If you attended either/both conferences, please respond to this statement: The biennial conferences gave participants a forum to share knowledge and concerns.	-	1	4	10	100 (15/15)
7	If you attended either/both conferences, please respond to this statement: The biennial conferences encouraged the government to implement policies that promote sustainable fisheries and coastal management.	3	1	3	8	80 (12/15)
8	If you attended either/both conferences, please respond to this statement: The USAID/UCC conferences have increased information and knowledge for natural resource management.	-	2	2	11	100 (15/15)
10	The Journal of Fisheries and Coastal Management contributes to information and knowledge for natural resource management.	3	1	8	11	87
11	Organizational and human capacity has been strengthened as a result of the increased technical and scientific knowledge generated by the USAID/UCC Fisheries Project in the principal areas.					
	Fisheries management	-	3	15	5	100
	Coastal management	1	3	14	5	96
	Fish stock assessment (shell and fin fish)	-	4	14	5	100
	GIS and remote sensing	3	7	11	2	87

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
	Coastal ecosystems and biodiversity sciences	4	4	10	5	83
	Climate change studies	3	2	14	4	87
	Small undergraduate research grants	2	3	10	8	91
	J-term undergraduate student exchange program with the University of Rhode Island	4	1	13	5	83
	Postgraduate scholarships	-	1	14	8	100
	Academic/administrative and technical capacity-strengthening activities	2	2	13	6	91
12	Organizational and human capacity has been strengthened as a result of the improved infrastructure and capacity-building facilitated by the USAID/UCC Fisheries Project FOR THE UNIVERSITY OF CAPE COAST (AS A WHOLE).	1	2	9	11	96
13	Organizational and human capacity of OTHER UCC DEPARTMENTS (not DFAS) has been strengthened as a result of the improved infrastructure and capacity building facilitated by the USAID/UCC Fisheries Project.	6	2	7	8	74
14	If you are a member of the Department of Fisheries and Aquatic Sciences/Centre for Coastal Management (DFAS/CCM), please answer: Organizational and human capacity of the DFAS/CCM has been strengthened as a result of the improved infrastructure and capacity building facilitated by the USAID/UCC Fisheries Project.	2	-	5	9	88 (14/16)
15	If you are a member of DFAS/CCM, please answer: USAID/UCC Fisheries Project efforts to improve the communication, extension, and outreach of marine and coastal research and resource assessment have resulted in increased information and knowledge for natural resource management.	-	-	7	8	100 (15/15)
16	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to capacity building in sustainable fisheries and coastal resources management.	2	4	7	10	91
17	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the CAPACITY-BUILDING OF STUDENTS at UCC.	1	2	7	13	96
18	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the CAPACITY-BUILDING OF CONFERENCE PARTICIPANTS.	1	3	9	10	96
19	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the	5	1	8	9	78

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
	CAPACITY-BUILDING OF SHORT COURSE PARTICIPANTS.					
20	The USAID/UCC Fisheries Project has effectively addressed the gender issues related to the CAPACITY-BUILDING OF WORKSHOP PARTICIPANTS.	4	3	8	8	83
26	The following USAID/UCC Fisheries Project activities should continue after the USAID funding ends:					
	Improved libraries/computer rooms	-	-	3	20	100
	Improved laboratories	-	-	3	20	100
	Improved vehicles	-	2	5	16	100
	Short courses	-	-	3	20	100
	Conferences	1	-	3	19	96
	Journal of Fisheries and Coastal Management	-	-	3	20	100
	Promote national-level policy dialogue	1	-	3	19	96
	Faculty capacity-building	1	-	6	16	96
	PhD/MPhil students research grants	-	-	5	18	100
	Undergraduate training	-	-	6	17	100
	Research	-	-	2	21	100

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 23. Stakeholder Group 3.A: UCC Faculty and Researcher Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Choice Questions (x/23)

2. Which USAID/UCC Fisheries Project activities did you benefit from?	Number that chose
Refurbished laboratories	8
Refurbished conference rooms	9
Refurbished library	7
Vehicles	10
Field equipment	9
Undergraduate research grants	1
Faculty capacity development	7
Consultancies to support livelihood activities	1
Attended conferences	12
Attended short courses	5
Serve as resources persons for short courses	3
Attended workshops	5

Other:	
CCM	1
Technical capacity development	1
Consultancy on research and assessment	1
Our farm was a centre for field visits	1
n/a	1
Financial management training	1
27. What do you feel were the MOST effective USAID/UCC Fisheries Project activities that you participated in?	**How many people chose**
Renovating and equipping fisheries and coastal research laboratory	14
Refurbishing and equipping office/lecture/computer rooms and library	6
Acquisition of vehicles to support educational, training, research, and extension activities	9
Academic and technical staff capacity strengthening	15
Operationalization of the Centre for Coastal Management	8
Support for postgraduate (MPhil & PhD) training program	10
Undergraduate research grants and J-Term students exchange program	4
Conducting fisheries stock assessment	1
Conducting research and assessment on marine fisheries governance issues	3
Research on fish and shellfish of commercial value	2
Analysis of value chains of fish trade	3
Monitor the biodiversity and health of coastal ecosystems	2
Developing marine and coastal fisheries database	6
Developing material and conducting training on integrated coastal management	1
Developing material and conducting training on fisheries management	2
Developing manuals and updating training materials on climate change adaptation and mitigation	1
Developing material and conducting training on the use and application of Geographical Information Systems (GIS)	0
Engaging policy makers to address coastal and fisheries issues (including two national conferences and creation of a new online Journal of Fisheries and Coastal Management)	4
Building institutional partnerships and collaboration	5
Wetlands ecological health monitoring using school clubs and communities	2
Strengthening community-based groups	5
Promoting supplementary livelihoods in coastal communities	4
28. What do you feel were the LEAST effective elements of the USAID/UCC Fisheries Project activities (i.e., areas that need strengthening in the future)?	**How many people chose**
Renovating and equipping fisheries and coastal research laboratory	1

Refurbishing and equipping office/lecture/computer rooms and library	2
Acquisition of vehicles to support educational, training, research, and extension activities	3
Academic and technical staff capacity strengthening	4
Operationalization of the Centre for Coastal Management	1
Support for postgraduate (MPhil & PhD) training program	2
Undergraduate research grants and J-Term students exchange program	2
Conducting fisheries stock assessment	4
Conducting research and assessment on marine fisheries governance issues	5
Research on fish and shellfish of commercial value	3
Analysis of value chains of fish trade	11
Monitor the biodiversity and health of coastal ecosystems	6
Developing marine and coastal fisheries database	2
Developing material and conducting training on integrated coastal management	2
Developing material and conducting training on fisheries management	2
Developing manuals and updating training materials on climate change adaptation and mitigation	3
Developing material and conducting training on the use and application of Geographical Information Systems (GIS)	2
Engaging policy makers to address coastal and fisheries issues (including two national conferences and creation of a new online Journal of Fisheries and Coastal Management)	6
Building institutional partnerships and collaboration	4
Wetlands ecological health monitoring using school clubs and communities	8
Strengthening community-based groups	7
Promoting supplementary livelihoods in coastal communities	8

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 24. Stakeholder Group 3.A: UCC Faculty and Researcher Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Yes/No Questions (x/23)

Question	Yes	No	Did Not Participate in a Training
9. I am a member of the project-created Fisheries and Aquaculture Society of Ghana.	5	18	-
21. If you participated in a training, are you using the knowledge and skills acquired in your day-to-day delivery of your work?	11	-	12
22. If you participated in a training, have you used that information to train others in your institution?	10	1	12
24. The USAID/UCC Fisheries Project has created online materials to sustain the	9	14	-

knowledge gained during trainings. Have you used any of these materials?			

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 25. Stakeholder Group 3.A: UCC Faculty and Researcher Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Written Response Questions (x/23)

4. If you participated in a workshop, how many did you participate in?
• 4 • Annual Work Planning Workshops • One(1) • N/A • 2 • Not applicable • one • About • 3

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 26. Stakeholder Group 5.A And 5.B: NGO and Producer Group Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Ranking Questions (x/9)

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
2	The USAID/UCC Fisheries Project's capacity-building activities have improved MY PERSONAL TECHNICAL AND SCIENTIFIC KNOWLEDGE of the most critical issues related to fisheries and coastal resource management.	-	3	4	2	100
4	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my PROFESSIONAL NETWORK with other experts in my CSO/producer group who are working on fisheries and coastal resource management issues (in general).	1	2	4	2	89
5	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my PROFESSIONAL NETWORK with Ghana's leading experts on fisheries and coastal management.	1	2	4	2	89
6	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my PERSONAL working relationship with FISHERIES AND COASTAL MANAGEMENT EXPERTS in the University of Cape Coast.	1	2	2	4	89
7	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my CSO/producer group's working relationships with	3	2	2	2	67

Q #	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	# Who Scored 7	% Who Scored 5-7
	OTHER UCC DEPARTMENTS not related to fisheries and coastal resource management.					
10	If you attended either/both conferences, please respond to this statement: The biennial conferences gave participants a forum to share knowledge and concerns	-	-	1	6	100 (7/7)
11	If you attended either/both conferences, please respond to this statement: The biennial conferences encouraged the government to implement policies that promote sustainable fisheries and coastal management.	-	2	1	4	100 (7/7)
12	If you attended either/both conferences, please respond to this statement: The USAID/UCC conferences have increased information and knowledge for natural resource management.	-	1	3	3	100 (7/7)
13	The Journal of Fisheries and Coastal Management contributes to information and knowledge for natural resource management.	2	1	3	3	78
15	The USAID/UCC Fisheries Project's capacity-building activities have increased the quality of my CSO/producer group's SUPPORT to fisheries and coastal management issues (i.e., it has improved our ability to solve problems related to fisheries and coastal resource management)	2	1	4	2	78
16	The USAID/UCC Fisheries Project's capacity-building activities have increased the FREQUENCY OF SUPPORT to fisheries and coastal resource management	-	4	3	2	100
17	The colleagues from my CSO/producer group who participated in the USAID/UCC Fisheries Project's capacity-building activities have used that information to build the capacity of OTHER COLLEAGUES	3	3	-	3	67
18	The USAID/UCC Fisheries Project's capacity-building activities have contributed to POLICY DECISIONS.	2	-	3	4	78
20	The USAID/UCC Fisheries Project's capacity-building activities have contributed to POLICY IMPLEMENTATION.	2	-	4	3	78
22	I expect to continue to use the skills and networks I acquired as a result of the project in the future	-	1	2	6	100

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 27. Stakeholder Group 5.A And 5.B: NGO and Producer Group Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Choice Questions (x/9)

1. What USAID/UCC Fisheries Project capacity-building activities did you participate in?	How many people chose
Short courses	6
Workshops	2
Conferences	6
Technical backstopping	1
Cuttlefish research project	4
Policy formulation review	1
Wetlands ecological health monitoring using school clubs and communities	2
Undergraduates sponsored by the project for national service	-
Hosted/collaborated with a graduate student working with the project	3
Hosted/collaborated with a professor/researcher working with the project	2
Hired a UCC graduate	3
Other: Capacity Building for UAV application	1
23. What do you feel were the MOST effective USAID/UCC Fisheries Project capacity-building activities that you participated in?	**How many people chose**
Short courses	5
Workshops	2
Conferences	7
Technical backstopping	-
Cuttlefish research project	1
Policy formulation review	-
Wetlands ecological health monitoring using school clubs and communities	2
Undergraduates sponsored by the project for national service	1
Hosted/collaborated with a graduate student working with the project	1
Hosted/collaborated with a professor/researcher working with the project	2
Hired a UCC graduate	1
Other: Capacity Building for UAV application	1
24. What do you feel were the LEAST effective elements of these USAID/UCC Fisheries Project activities (i.e., areas that need strengthening in the future)?	**How many people chose**
Short courses	-
Workshops	-
Conferences	1
Technical backstopping	1
Cuttlefish research project	2
Policy formulation review	-
Wetlands ecological health monitoring using school clubs and communities	-

Undergraduates sponsored by the project for national service	1
Hosted/collaborated with a graduate student working with the project	1
Hosted/collaborated with a professor/researcher working with the project	-
Hired a UCC graduate	1
Other: Every activity was useful	1
Other: Supplementary livelihood activities	1
Other: None	1
14. How many existing or new initiatives in your CSO/producer group have been influenced by the capacity-building support that you or your colleagues personally received?	**How many people chose**
None	1
1-5	6
6-10	-
11 or more	2

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 28. Stakeholder Group 5.A And 5.B: NGO and Producer Group Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Yes/No Question (x/9)

Question	Yes	No
8. I am a member of the project-created Fisheries and Aquaculture Society of Ghana.	-	9

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 29. Stakeholder Group 6: Media Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Ranking Questions (x/17)

Q#	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	3 Who Scored 7	% Who Scored 5-7
3	The USAID/UCC Fisheries Project's capacity-building activities have IMPROVED MY TECHNICAL AND SCIENTIFIC KNOWLEDGE of the most critical issues related to fisheries and coastal resource management.	1	1	6	9	94
5	The USAID/UCC Fisheries Project's capacity-building activities have STRENGTHENED MY PERSONAL NETWORK WITH OTHER MEDIA EXPERTS working on fisheries and coastal resource management issues (in general).	2	1	6	8	88
6	The USAID/UCC Fisheries Project's capacity-building activities have STRENGTHENED MY PERSONAL NETWORK WITH GHANA'S LEADING EXPERTS ON FISHERIES AND COASTAL MANAGEMENT.	1	2	5	9	94

Q#	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	3 Who Scored 7	% Who Scored 5-7
8	If you attended either/both conferences, please respond to this statement: The biennial conferences gave participants a forum to share knowledge and concerns.	-	-	4	8	100 (12/12)
9	If you attended either/both conferences, please respond to this statement: The biennial conferences encouraged the government to implement policies that promote sustainable fisheries and coastal management.	1	2	4	5	92 (11/12)
10	If you attended either/both conferences, please respond to this statement: The USAID/UCC conferences have increased information and knowledge for natural resource management.	-	-	4	8	100 (12/12)
11	The Journal of Fisheries and Coastal Management contributes to information and knowledge for natural resource management.	1	-	8	8	94
12	The USAID/UCC Fisheries Project-facilitated WhatsApp media group (Coast to Coast) has resulted in the increased sharing of information and knowledge for natural resource management to the public in Ghana.	-	2	4	11	100
13	The USAID/UCC Fisheries Project's capacity-building activities have increased the QUALITY OF MY MEDIA OUTLET'S REPORTING on fisheries and coastal management issues.	1	1	4	11	94
14	The USAID/UCC Fisheries Project's capacity-building activities have increased the FREQUENCY OF MY MEDIA OUTLET'S REPORTING on fisheries and coastal resource management issues.	3	1	8	5	82
16	COLLEAGUES from my media outlet who participated in the USAID/UCC Fisheries Project's capacity-building activities have used that information to build the capacity of other colleagues.	5	-	6	6	71
17	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my media outlet's working relationship with FISHERIES AND COASTAL MANAGEMENT EXPERTS in the University of Cape Coast.	1	1	8	7	94
18	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my media outlet's working relationship with OTHER UCC DEPARTMENTS not related to fisheries and coastal resource management.	4	5	5	3	76
19	The USAID/UCC Fisheries Project's capacity-building activities have strengthened my media	2	4	7	4	88

Q#	Ranking Questions	# Who Scored 1-4	# Who Scored 5	# Who Scored 6	3 Who Scored 7	% Who Scored 5-7
	outlet's working relationship with OTHER ACADEMIC INSTITUTIONS in Ghana.					
22	I expect to continue to use the skills and networks I acquired as a result of the USAID/UCC Fisheries Project in the future.	-	-	3	14	100

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 30. Stakeholder Group 6: Media Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Choice Questions (x/17)

1. What USAID/UCC Fisheries Project capacity-building activities did you PARTICIPATE IN?	How many people chose
Short courses	10
Workshops	11
Conferences	9
Other: Event coverage	1
2. What USAID/UCC Fisheries Project capacity-building activities did you COVER AS A JOURNALIST?	**How many people chose**
Short courses	9
Workshops	11
Conferences	10
Other: Award ceremony for fishermen, fish mongers	1
15. How many articles/broadcasts on fisheries and coastal resource management issues has YOUR MEDIA OUTLET has produced in the last two years?	**How many people chose**
None	-
1-5	4
6-10	1
11-15	1
16-20	4
More than 20	7
23. What do you feel were the MOST effective USAID/UCC Fisheries Project activities that you participated in?	**How many people chose**
Short courses	10
Workshops	12
Conferences	4
Other: Coastal region tour	1
24. What do you feel were the LEAST effective elements of the USAID/UCC Fisheries Project activity (i.e., area that needs strengthening in the future)?	**How many people chose**
Short courses	6

Workshops	4
Conferences	7
Other: None (they were all useful)	4

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

Table 31. Stakeholder Group 6: Media Responses for the FCMCBSP Final Performance Evaluation Online Questionnaire for Yes/No Question (x/17)

Question	Yes	No
20. I am a member of the project-created Fisheries and Aquaculture Society of Ghana.	7	10

Source: FCMCBSP Final Performance Evaluation online questionnaire results, January 2020.

ANNEX V. ADDITIONAL TABLES

Table 32. Target Regions, Districts/Municipalities/Metropolitan Areas, and Communities for FCMCBSP Activities, FY 2014-2019 (X=Yes)

	Regions	Districts/ Municipalities/ Metropolitan Areas	Communities Where Research Was Conducted and/or District-Level Officials Attended the Two National Conferences	Research Districts and Fisheries Conference	Government Staff Training Courses	Project-Implemented Community-Based Activities[114]
1	Central	Abura-Asebu-Kwamankese District	Moree	X	X	X
2	Central	Cape Coast Metropolitan		X	X	
3	Central	Komenda/ Edina /Eguafo/ Abirem Municipal	Elmina	X	X	X
4	Central	Ekumfi District	Narkwa	X	X	X
5	Central	Effutu Municipal			X	
6	Central	Gomoa West District	Apam	X	X	X
7	Central	Gomoa East District			X	
8	Central	Mfantsiman Municipal			X	
9	Central	Upper Denkyira East Municipal			X	
10	Central	Awutu Senya District		X		
11	Volta	Ketu South Municipal			X	
12	Volta	Keta Municipal		X	X	
13	Volta	Ho Municipal			X	
14	Volta	Nkwanta North District			X	

[114] In addition to the seven core activities described in the previous footnote, the project executed supplementary livelihood activities (*e.g.,* snail farming, oyster farming, and beekeeping and strengthening of CBFMGs in these villages.

	Regions	Districts/ Municipalities/ Metropolitan Areas	Communities Where Research Was Conducted and/or District-Level Officials Attended the Two National Conferences	Research Districts and Fisheries Conference	Government Staff Training Courses	Project-Implemented Community-Based Activities[114]
15	Volta	Hohoe Municipal			X	
16	Volta	South Tongu District			X	
17	Western	Ahanta West District			X	
18	Western	Jomoro District	Half Assini	X	X	X
19	Western	Shama District	Anlo Beach	X	X	X
20	Western	Nzema East Municipal	Axim	X	X	X
21	Western	Ahanta West District		X	X	
22	Western	Ellembele District	Ankobra	X	X	X
23	Western	Sekondi-Takoradi Metropolitan		X	X	
24	Greater Accra	Kpone Katamanso Municipal			X	
25	Greater Accra	Ledzokuku-Krowor Municipal			X	
26	Greater Accra	Accra Metropolitan		X	X	
27	Greater Accra	Dangme East District			X	
28	Greater Accra	Tema Metropolitan		X	X	
29	Greater Accra	Ada East District		X	X	
30	Greater Accra	Ada West District		X	X	
31	Greater Accra	Ningo Prampram District		X	X	

	Regions	Districts/ Municipalities/ Metropolitan Areas	Communities Where Research Was Conducted and/or District-Level Officials Attended the Two National Conferences	Research Districts and Fisheries Conference	Government Staff Training Courses	Project-Implemented Community-Based Activities[114]
32	Greater Accra	Ayawaso West District			X	
33	Greater Accra	Ga South Municipal			X	
34	Greater Accra	La Dade-Kotopon Municipal			X	
35	Ashanti	Kumasi Metropolitan Assembly		X[115]		
36	Brong-Ahafo	Sunyani Municipal Assembly		X[116]	X	
37	Northern	Tamale Metropolitan Assembly		X[117]		
38	Greater Accra	Shai Osudoku District			X	

Source: USAID. 2019. Draft UCC FCMCBSP Evaluation SOW. Pg. 6. April 24, 2019 (Annex II) and FCMCBSP Communication, October 11, 2019. Revised November 15, 2019 by FCMCBSP M&E Support Joshua Adotey based on project M&E data. Updated April 8, 2020.

Table 33. Activities Frequently Identified as Examples of FCMCBSP Best Practice and Stakeholder Feedback on Reasons for This Identification

Activities Identified as Examples of Best Practice in FGDs and By the Evaluation Team	Reasons Given for Identifying This as a Project Best Practice
The biennial national conferences.	"This produced concrete results" (DFAS faculty member)
The five assessments executed by the consultants with complementary assessments by the students.	"These studies got critical information out quickly, not through journals but through the annual conferences and workshops in ways that informed policy" (DFAS faculty member)

[115] This district benefitted from small grants intended to support undergraduate research. Additionally, the faculty of KNUST (which is located in Kumasi Metropolitan) participated in FCMCBSP research activities as consultants.

[116] This district only benefitted from small grants intended to support undergraduate research.

[117] This district only benefitted from small grants intended to support undergraduate research.

Activities Identified as Examples of Best Practice in FGDs and By the Evaluation Team	Reasons Given for Identifying This as a Project Best Practice
The collaborative model FCMCBSP developed with its four sister universities and the use of the undergraduate research fellowships to get students involved.	"This collaboration got results in terms of strengthening the exchange of information and people between the five universities through multiple channels that complemented the other sustainable linkages for maintaining these connections (Conferences, Journal, Society, FishCoMGhana) (DFAS faculty member)
1. The URI-UCC dual-degree program being pilot tested with DFAS.	"The dual-degree program—which is just starting in 2020—exposes the students to different cultures and an international university, creates new and strengthens existing networks between the two institutions whilst building the capacity of both institutions students. For this to work, however, it needs to be part of a higher collaboration between the two universities. " (DFAS faculty member)
2. The wetlands ecological monitoring with junior school students.	"This is a promising model that produced concrete results very quickly that needs to be scaled up in both Ghana and in other coastal African countries (DFAS faculty member)
3. FCMCBSP's decision to help build the capacity of GITA by: 1) involving them in one of the five research studies and assessments; 2) sponsoring (with SFMP) some of GITA's senior members visiting URI; and 3) sponsoring some of their members participation in the biennial conferences.	"This had huge payoffs in terms of convincing the trawlers to support MoFAD's decision to announce the first closed season" (DFAS faculty member)
4. The short-term professional training of DFAS staff.	-"These trainings were not expensive and had lots of payoffs" (DFAS faculty member) -Some of the specific examples cited in the FGDs and verified with the project included: 1) "One DFAS professor to study maritime law in Australia, which helped us to develop DFAS's first course in environmental law;" 2) "Two other professors went to URI where they studied URI's courses on climate change and adaptation which enabled him to introduce DFAS's first course on climate change;" and 3) "Another professor got to study some of the new methodologies used to conduct stock assessments and learned how to use new analytical instruments for stock assessments which enabled him to come back and start the 'age and growth' lab in collaboration with URI" (DFAS faculty member)

Activities Identified as Examples of Best Practice in FGDs and By the Evaluation Team	Reasons Given for Identifying This as a Project Best Practice
5. FCMCBSP developed a media strategy, including: 1) basic training combined with the field visits journalists needed to produce stories; 2) facilitating their participation in FCMCBSP-sponsored short-term trainings and in the biennial workshops; 3) encouraging them to consult DFAS and CCM staff for any technical help in clarify their studies; and 4) helping them to develop a WhatsApp group that makes it easy to alert members to new opportunities and information on different stakeholder groups.	-100 percent of the 12 media respondents for the online questionnaire agreed the FCMCBSP-facilitated WhatsApp group resulted in increased sharing of information and knowledge for NRM to the Ghanaian public, and 94 percent agree the project's capacity-building activities have increased the quality of their media outlet's reporting. - "The social media platform that was developed for the media should be developed for other groups and for the recipients of different types of CCM training" (DFAS faculty member)

Source: FCMCBSP Final Performance Evaluation FGDs and online questionnaire results, January 2020.

Table 34. FCMCBSP Budget Breakdown by Project Output and Activity by Year, FY 2015-FY 2020.

Project Outputs	Activity No.	Activity Description	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget	FY 2018 Budget	FY 2019 Budget	TOTAL (US$)	% Budget
Project Management		Management of Project and M&E	17,500.00	37,600.00	68,297.73	80,537.70	131,797.73	335,733.15	6.10
		Compensation for Hired Administration and Operations Staff	107,631.29	104,803.96	113,636.98	134,780.89	81,290.52	542,143.64	9.86
		SUB-TOTAL	125,131.29	142,403.96	181,934.70	215,318.60	213,088.25	877,876.80	16.0
Project Output 1.1	1.1.1	Renovating and equipping Fisheries and Coastal Research Laboratory	467,239.61	83,113.00	40,384.72	73,316.28	39,000.00	703,053.61	12.78
	1.1.2	Refurbishing and equipping offices of academic staff	306,280.36	1,624.92	42,660.44	6,958.96	6,200.00	363,724.68	6.61

Project Outputs	Activity No.	Activity Description	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget	FY 2018 Budget	FY 2019 Budget	TOTAL (US$)	% Budget
	1.1.3	Acquisition of vehicles to support educational, training, research and extension activities	238,549.95	60,298.11	26,650.00	75,570.88	30,034.21	431,103.15	7.84
		SUB-TOTAL	###########	145,036.03	109,695.16	155,846.12	75,234.21	1,497,881.44	27.2
Project Output 1.2	1.2.1	Academic and technical staff capacity strengthening	5,000.00	36,856.00	52,880.00	26,420.00	34,500.00	155,656.00	2.83
	1.2.2	Operationalizing of the Centre for Coastal Management	31,924.00	60,843.34	60,374.63	31,074.63	51,114.55	235,331.16	4.28
	1.2.3	Support for postgraduate (M. Phil. and PhD) training program	14,400.00	150,300.00	235,405.00	293,742.21	139,012.63	832,859.84	15.14
	1.2.4	Undergraduate research grants & J-Term exchange program	3,850.00	16,000.00	14,500.00	61,020.00	74,500.00	169,870.00	3.09
		SUB-TOTAL	55,174.00	263,999.34	363,159.63	412,256.84	299,127.18	1,393,717.00	25.3
Project Output 2.1	2.1.1	Conducting fisheries stock assessment	-	53,998.00	40,000.00	22,000.00	29,000.00	144,998.00	2.64
	2.1.2	Conducting research and	-	50,000.00	50,000.00	45,000.00	79,000.00	224,000.00	4.07

Project Outputs	Activity No.	Activity Description	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget	FY 2018 Budget	FY 2019 Budget	TOTAL (US$)	% Budget
		assessment on marine fisheries governance issues							
	2.1.3	Research on fish and shellfish of commercial value	-	15,000.00	8,000.00	16,000.00	16,000.00	55,000.00	1.00
	2.1.4	Analysis of value chains of fish trade	-	-	-	4,000.00	4,000.00	8,000.00	0.15
	2.1.5	Monitor the biodiversity and health of coastal ecosystems	-	8,000.00	8,000.00	12,000.00	26,800.00	54,800.00	1.00
	2.1.6	Developing marine and coastal fisheries database	14,321.95	30,000.00	20,000.00	18,000.00	20,000.00	102,321.95	1.86
		SUB-TOTAL	14,321.95	156,998.00	126,000.00	117,000.00	174,800.00	589,119.95	10.7
Project Output 2.2	2.2.1	Developing material and conducting training on integrated coastal management	-	20,000.00	30,000.00	15,000.00	30,000.00	95,000.00	1.73
	2.2.2	Developing material and conducting training on fisheries management	-	20,000.00	40,000.00	15,000.00	30,000.00	105,000.00	1.91

Project Outputs	Activity No.	Activity Description	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget	FY 2018 Budget	FY 2019 Budget	TOTAL (US$)	% Budget
	2.2.3	Developing manuals and updating training materials on climate change adaptation and mitigation	50,000.00	35,000.00	30,000.00	15,000.00	30,000.00	160,000.00	2.91
	2.2.4	Developing material and conducting training on the use and application of Geographic Information Systems (GIS)	-	42,500.00	58,000.00	38,000.00	50,000.00	188,500.00	3.43
	2.2.5	Engaging policy makers to address coastal and fisheries issues	38,000.00	69,500.00	69,500.00	50,500.00	-	227,500.00	4.14
	2.2.6	Building institutional partnerships and collaboration	40,500.00	-	-	-	-	40,500.00	0.74
	2.2.7	Wetlands ecological health monitoring using school clubs and communities	-	20,000.00	30,000.00	24,000.00	-	74,000.00	1.35

Project Outputs	Activity No.	Activity Description	FY 2015 Budget	FY 2016 Budget	FY 2017 Budget	FY 2018 Budget	FY 2019 Budget	TOTAL (US$)	% Budget
	2.2.8	Strengthening community-based groups	30,000.00	40,000.00	10,600.00	10,000.00	-	90,600.00	1.65
	2.2.9	Promoting supplementary livelihoods in coastal communities	20,000.00	60,000.00	49,400.00	30,741.40	-	160,141.40	2.91
		SUB-TOTAL	178,500.00	307,000.00	317,500.00	198,241.40	140,000.00	1,141,241.40	20.8
		TOTAL EXPENDITURE (US$)	1,385,197.16	1,015,437.33	1,098,289.49	1,098,662.96	902,249.64	5,499,836.58	100.00

Source: FCMCBSP M&E Coordinator Noble K. Asare, February 1, 2020

Table 35. Partial List of Other Universities and Research Institutions That Have Used the FCMCBSP-funded Laboratory Facilities, FY 2015-FY 2020

S/N	Department[118]
1	Conservation Biology and Entomology
2	Biochemistry
3	Environmental Science
4	Laboratory Technology
5	Biomedical Sciences
6	School of Agricultural Sciences
7	Chemistry
8	Physics
9	Molecular Biology and Biotechnology

Source: FCMCBSP M&E Support Joshua Adotey, February 16, 2020

[118] In our records no other university or research institution besides sister departments in UCC have used the laboratory facilities. However, below is the list of departments in the university who access the fisheries and coastal research laboratory.

Table 36. List of Faculty and Staff Who Received Academic and Technical Capacity-Building (FY 2015-FY 2019) - Total Expenditure (US$ 165,656.00)

No.	Name of Staff	Sex	Staff Category	UCC Job Title	Project Role	Description of Capacity-Building Activity/Focus	Impact
1	Prof. Denis W. Aheto	M	Academic Staff (DFAS)	Associate Professor, Director (CCM)	Project Manager	Maritime security and enforcement, project management training, Proposal writing and grantsmanship	Enhanced teaching and research capacity in maritime law and enforcement at the postgraduate level, Leadership to manage other Donor funds including the World Bank ACECoR Project, Securing two maiden Centers of Excellence (World Bank ACECoR; AU Africa Centre of Excellence in Fisheries and Aquaculture) at UCC.
2	Dr. Noble K Asare	M	Academic Staff (DFAS)	Senior Lecturer, HoD (DFAS)	Project M&E Coordinator	Climate change adaptation and mitigation in coastal areas*, Proposal writing and grantsmanship	Introduction and teaching of one (1) undergraduate course and one (1) postgraduate course in Climate Change (from 2019/2020 academic year) in a revised curricula of DFAS, development and running of one (1) short course in climate change adaptation by CCM, Securing two maiden Centers of Excellence (World Bank ACECoR; AU Africa Centre of Excellence in Fisheries and Aquaculture) at UCC, revision and improvement in strategic plan, and introduction of business plan for DFAS
3	Prof. Kobina Yankson	M	Academic Staff (DFAS)	Professor	Member, Project Management Board	Climate change adaptation and mitigation in coastal areas*	Introduction of one (1) undergraduate course and one (1) postgraduate course in Climate Change in the revised curricula of DFAS being implemented from 2019/2020 academic year, development and running of one short course in climate change adaptation by CCM.

No.	Name of Staff	Sex	Staff Category	UCC Job Title	Project Role	Description of Capacity-Building Activity/Focus	Impact
4	Prof. John Blay	M	Academic Staff (DFAS)	Professor	Member, Project Management Board	Maritime security and enforcement, Use of analytical instruments	Enhanced teaching and research capacity at DFAS in areas of maritime law and enforcement at the postgraduate level Integrated Coastal Zone Management Programs
5	Prof. Edward Obodai	M	Academic Staff (DFAS)	Professor	-	Water quality management in oyster culture*	Improved research, teaching and culture in shellfish aquaculture
6	Prof. Josepth Aggrey-Fynn	M	Academic Staff (DFAS)	Associate Professor, Vice Dean	-	Fish growth and ageing techniques*	Improved teaching and research the use of fish ageing techniques in fish stock assessment
7	Dr. Emmanuel Acheampong	M	Academic Staff (DFAS)	Lecturer	-	Climate change adaptation and mitigation in coastal areas*	Introduction and teaching of one (1) undergraduate course and one (1) postgraduate course in Climate Change (from 2019/2020 academic year) in a revised curricula of DFAS, development and running of one (1) short course in climate change adaptation by CCM.
8	Dr. Isaac Okyere	M	Academic Staff (DFAS)	Lecturer	-	Maritime security and enforcement	Enhanced teaching and research capacity at DFAS in areas of maritime law and enforcement at the postgraduate level Integrated Coastal Zone Management Programs
9	Dr. Precious Mattah	M	Academic Staff (CCM)	Senior Research Fellow	-	Proposal writing and grantsmanship	Securing a Centre of Excellence (World Bank Africa Centre of Excellence in Coastal Resilience)
10	Dr. Donatus Angnuureng	M	Academic Staff (CCM)	Research Fellow	-	Proposal writing and grantsmanship	Securing a Centre of excellence (World Bank African Centre of Excellence in Coastal Resilience)
11	Ms. Esinam Attipoe	F	Project Support Group	Project Management Support	Project Management Support	Project and program management	New knowledge and skills for future project management

No.	Name of Staff	Sex	Staff Category	UCC Job Title	Project Role	Description of Capacity-Building Activity/Focus	Impact
12	Mr. Prosper Dordunu	M	Technical Staff	Senior Laboratory Technologist (DFAS)	-	Operations and maintenance of laboratory analytical instruments*, Laboratory health and safety*	Improved laboratory operation and management through the drafting of lab management documents (e.g. lab management policies), ISO accreditation documents, and introduction of laboratory management software.
13	Mr. Thomas Davis	M	Technical Staff	Principal Laboratory Technician (DFAS)	-	Operations and maintenance of laboratory analytical instruments*, Laboratory health and safety*	Improved laboratory operation and management through the drafting of lab management documents (e.g. lab management policies), ISO accreditation documents, and introduction of laboratory management software.
14	Ms. Margaret Winwah	F	Administrative Staff	Chief Administrative Assistant (DFAS)	-	Training on modern administrative procedures (including electronic filing system, administrative planning and communication)[119]	Improved and effective use of ICT in administrative management
15	Mr. Kwabena Owusu	M	Finance	Senior Accountant	Project Finance Officer	Financial reporting and auditing for donor funded projects	Improved financial management of donor funds
16	Mr. Ernest Nyan	M	Audit	Internal Auditor, UCC	-	Financial reporting and auditing for donor funded projects	Improved financial management of donor funds

Source: FCMCBSP M&E Coordinator Noble Asare, January 23, 2020

[119] In partnership with USAID SFMP, Coastal Resources Center, URI, USA

Table 37. List of Courses and Programs Revised Through Direct or Indirect Support from FCMCBSP

No.	Programs/Courses	Description
1	Integrated Coastal Zone Management	New modular postgraduate program[120]
2	Fisheries Science	New modular postgraduate program
3	Oceanography and Limnology	New modular postgraduate program
4	Introduction to Ecological Modeling	Revised undergraduate course[121]
5	Petroleum Ecology	Revised undergraduate course
6	Introduction to Issues in Climate Change	New undergraduate course
7	Climate Change Mitigation and Adaptation in Coastal Areas	Newly postgraduate course

Source: FCMCBSP M&E Coordinator Noble Asare, Revised October 9, 2020

Table 38. List of DFAS Students Supported for M.Phil. and Ph.D. by Category of Finance, Year, and Source of Finance (FY 2014-FY 2019)

Student	Sex	Degree	Month/ Year Graduating	Funding Year and Source 14-15[122]	Funding Year and Source 15-16	Funding Year and Source 16-17	Funding Year and Source 17-18	Funding Year and Source 18-19	Funding Year and Source 19-20	FCMCBSP Activity Worked On/ Working On[123]	Employment or Employment Prospects
1	Male	Ph.D.	March 2020	F-F	F-F	F-F				2.1.3	Regular Job
2	Female	Ph.D.	March 2020	F-F	F-F	F-F				2.1.3	Prospecting
3	Female	Ph.D.	Graduated	F-F	F-F	F-F				2.1.3	Prospecting
4	Female	Ph.D.	March 2020	F-F	F-F	F-F				2.1.5	Temporary Job
5	Female	Ph.D.	March 2020	F-F	F-F	F-F				2.1.5	Regular Job
6	Male	Ph.D.	March 2020		F-F	F-F	F-F			2.1.5	Deceased

[120] Existing postgraduate programs in DFAS were revised into modules to accommodate new concepts as well as meet the requirements of ACECoR. The modular programs were designed for M.Phil. and Ph.D. students

[121] As a requirement from the National Accreditation Board, all programs must be revised every five (5) years.

[122] S-P -SMFP Partial Award (these are the two SFMP-funded students); F-P=FCMCBSP partial award; F-F FCMCBSP full award; Self (self funded); WB-P (World Bank partial award); WB-F (World Bank full award)

[123] 2.1.1. Fisheries stock assessment; 2.1.2. Marine fisheries governance issues; 2.1.3. Fish and Shellfish of commercial value; 2.1.4. Value chains of fish trade; 2.1.5. Biodiversity and health of coastal ecosystem.

Student	Sex	Degree	Month/ Year Graduating	Funding Year and Source 14-15[122]	Funding Year and Source 15-16	Funding Year and Source 16-17	Funding Year and Source 17-18	Funding Year and Source 18-19	Funding Year and Source 19-20	FCMCBSP Activity Worked On/ Working On[123]	Employment or Employment Prospects
7	Female	Ph.D.	March 2020		F-F	F-F	F-F			2.1.1	Prospecting
8	Female	Ph.D.	March 2020		F-F	F-F	F-F			2.1.3	Regular Job
9	Female	Ph.D.	March 2020		F-F	F-F	F-F			2.1.5	Regular Job
10	Female	Ph.D.	March 2020		F-F	F-F	F-F			2.1.4	Prospecting
11	Female	Ph.D.	March 2020		F-P/ S-P	F-P/ S-P	F-P/ S-P			2.1.5	Prospecting
12	Female	Ph.D.	March 2020		F-P/ S-P	F-P/ S-P	F-P/ S-P			2.1.3	Prospecting
13	Male	Ph.D.	March 2020		F-P	F-P	F-P			2.1.3	Regular Job
14	Female	Ph.D.	March 2020		F-F	F-F	F-F			2.1.5	Unemployed
15	Male	Ph.D.	March 2020		F-P	F-P	F-P			2.1.3	Unemployed
16	Female	Ph.D.	March 2020		F-P	F-P	F-P			2.1.5	Unemployed
17	Female	M.Phil.	March 2020			F-F	F-F			2.1.3	Unemployed
18	Female	M.Phil.	Graduated			F-F	F-F			2.1.3	Prospecting
19	Male	M.Phil.	Graduated			F-F	F-F			2.1.3	Prospecting
20	Male	M.Phil.	March 2020			F-F	F-F			2.1.5	Prospecting
21	Female	M.Phil.	March 2020			F-F	F-F			2.1.2	Unemployed
22	Male	M.Phil.	March 2020				F-F	F-F		2.1.5	Unemployed
23	Male	M.Phil.	March 2020				F-F	F-F		2.1.3	Unemployed
24	Male	M.Phil.	March 2020				F-F	F-F		2.1.5	Unemployed
25	Female	M.Phil.	March 2020				F-F	F-F		2.1.3	Unemployed
26	Female	M.Phil.	March 2020				F-F	F-F		2.1.3	Unemployed
27	Male	M.Phil.	March 2020		F-F	F-F				2.1.3	Prospecting
28	Male	M.Phil.	March 2020		F-F	F-F				2.1.3	Withdrawn
29	Female	M.Phil.	Graduated		F-F	F-F				2.1.3	Prospecting

Student	Sex	Degree	Month/ Year Graduating	Funding Year and Source 14-15[122]	Funding Year and Source 15-16	Funding Year and Source 16-17	Funding Year and Source 17-18	Funding Year and Source 18-19	Funding Year and Source 19-20	FCMCBSP Activity Worked On/ Working On[123]	Employment or Employment Prospects
30	Female	M.Phil.	Graduated		F-F	F-F				2.1.3	Regular Job
31	Female	M.Phil.	Graduated		F-F	F-F				2.1.3	Regular Job
32	Female	M.Phil.	Graduated	F-F	F-F					2.1.2	Postgraduate Studies
33	Female	M.Phil.	Graduated	F-F	F-F					2.1.2	Regular Job
34	Male	M.Phil.	Graduated	F-F	F-F					2.1.2	Unemployed
35	Male	M.Phil.	Graduated	F-F	F-F					2.1.3	Temporary job
36	Male	M.Phil.	Graduated	F-F	F-F					2.1.3	Consulting

Source: FCMCBSP M&E Support Joshua Adotey, January 9, 2020

Table 39. Evolution of DFAS Faculty, Course Loads, and Participation in FCMCBSP Activities

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
1	April 2009	1. Courses taught (total number for the academic year)		21				23
		2. Tenure/Active status	Senior Lecturer	Senior Lecturer	Associate Professor	Associate Professor	Associate Professor	Associate Professor
		3. # of M.Phil./Ph.D. students supervised	2/0	1/1	3/5			
		4. # Student committees appointed to	2	2	8			
		5. Other responsibilities in	DFAS Chair, Project Manager	DFAS Chair, Project Manager	CCM Director, Project Manager	CCM Director,	CCM Director,	CCM Director,

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		the department (write out)				Project Manager	Project Manager	Project Manager
2	December 2010	1. Courses taught (total number for the academic year)		21.5				34.5
		2. Tenure/Active status	Lecturer	Lecturer	Senior Lecturer	Senior Lecturer	Senior Lecturer	Senior Lecturer
		3. # of M.Phil./Ph.D. students supervised	0/0	2/0	3/2	3/2	2/2	0/3
		4. # Student committees appointed to	0	2	5	5	4	3
		5. Other responsibilities in the department (write out)	DFAS Exams Officer, M&E Coordinator	DFAS Exams Officer, M&E Coordinator	DFAS Chair, M&E Coordinator	DFAS Chair, M&E Coordinator	DFAS Chair, M&E Coordinator	DFAS Chair, M&E Coordinator
		6. Level of involvement in FCMCBSP activities (1-7)	7	7	7	7	7	7
3	October 1978	1. Courses taught (total number for the academic year)		20.5				7.5
		2. Tenure/Active status	Professor	Professor	Professor	Professor	Professor	Professor
		3. # of M.Phil./Ph.D. students supervised	1/0	1/2	2/4			
		4. # Student committees appointed to	1	3	6			
		5. Other responsibilities in						

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		the department (write out)						
		6. Level of involvement in FCMCBSP activities (1-7)	6	6	6	6	6	5
4	July 1986	1. Courses taught (total number for the academic year)		24				
		2. Tenure/Active status	Professor	Professor	Professor	Professor	Professor	Professor
		3. # of M.Phil./Ph.D. students supervised		2/3	3/7			
		4. # Student committees appointed to		5	10			
		5. Other responsibilities in the department (write out)						
		6. Level of involvement in FCMCBSP activities (1-7)	6	6	6	6	6	5
5	January 2005	1. Courses taught (total number for the academic year)		15				18.5
		2. Tenure/Active status	Professor	Professor	Professor	Professor	Professor	Professor
		3. # of M.Phil./Ph.D. students supervised	1/0	1/0	3/2			

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		4. # Student committees appointed to	1	1	5			
		5. Other responsibilities in the department (write out)						
		6. Level of involvement in FCMCBSP activities (1-7)	4	4	4	4	4	4
6	October 2002	1. Courses taught (total number of credits for the academic year)		22.5				13.5
		2. Tenure/Active status	Senior Lecturer	Senior Lecturer	Associate Professor	Associate Professor	Associate Professor	Associate Professor
		3. # of M.Phil./Ph.D. students supervised	1/0	1/1	2/4			
		4. # Student committees appointed to	1	2	6			
		5. Other responsibilities in the department (write out)	Director, Institute of Oil and Gas Studies, UCC	Director, Institute of Oil and Gas Studies, UCC	Director, Institute of Oil and Gas Studies, UCC	Vice Dean	Vice Dean	Vice Dean
		6. Level of involvement in FCMCBSP activities (1-7)	4	4	4	4	4	4
7	April 2016	1. Courses taught (total number for the academic year)	-					41

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		2. Tenure/Active status	-	Lecturer	Lecturer	Lecturer	Lecturer	Lecturer
		3. # of M.Phil./Ph.D. students supervised			1/1			
		4. # Student committees appointed to			2			
		5. Other responsibilities in the department (write out)				Seminar Coordinator	Seminar Coordinator	Academic Coordinator, ACECoR
		6. Level of involvement in FCMCBSP activities (1-7)			5	5	5	5
8	December 2012	1. Courses taught (total number for the academic year)		18.5				37.5
		2. Tenure/Active status	Lecturer	Lecturer	Lecturer	Lecturer	Lecturer	Lecturer
		3. # of M.Phil./Ph.D. students supervised	2/0	2/1	2/3			
		4. # Student committees appointed to	2	3	5			
		5. Other responsibilities in the department (write out)	-	-	DFAS Exams Officer	Dept. Reg. & Exams Officer	Dept. Reg. & Exams Officer	Dept. Reg. & Exams Officer
		6. Level of involvement in	5	5	5	5	5	5

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		FCMCBSP activities (1-7)						
9	June 2018	1. Courses taught (total number for the academic year)						24.5
		2. Tenure/Active status	-	-	-	-	Lecturer	Lecturer
		3. # of M.Phil./Ph.D. students supervised						
		4. # Student committees appointed to						
		5. Other responsibilities in the department (write out)	-	-	-	-	-	-
		6. Level of involvement in FCMCBSP activities (1-7)	-	-	-	-	5	5
10	September 2019	1. Courses taught (total number for the academic year)	-	-	-	-	-	4.5
		2. Tenure/Active status	-	-	-	-	-	Lecturer
		3. # of M.Phil./Ph.D. students supervised	-	-	-	-	-	-
		4. # Student committees appointed to	-	-	-	-	-	-
		5. Other responsibilities in	-	-	-	-	-	Seminar Coordinator

Professor	Year Hired	Work Load	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		the department (write out)						
		6. Level of involvement in FCMCBSP activities (1-7)	-	-	-	-	-	5
11	July 2004	1. Courses taught (total number for the academic year)						18
		2. Tenure/Active status						
		3. # of M.Phil./Ph.D. students supervised						
		4. # Student committees appointed to						
		5. Other responsibilities in the department (write out)	Reg. Officer	Reg. Officer	Reg. Officer	Academic Advisor	Academic Advisor	Academic Advisor
		6. Level of involvement in FCMCBSP activities (1-7)	4	4	4	4	4	4

Source: FCMCBS M&E Coordinator Noble Asare, February 17, 2020

Table 40. Number of Students by Year, Institution, and Department That Received FCMCBSP-funded Undergraduate Research Grants, FY 2014- present

Institution	Department	AY[124] 14-15	AY 15-16	AY 16-17	AY 17-18	AY 18-19	Total Who Got Fellowships	Total Number Who Responded to Follow-up Survey
UCC	DFAS	7	32	7	27	7	80	20
KNUST	Department of Fisheries and Watershed Management	-	5	5	11	7	28	2
UG	Department of Marine & Fisheries Sciences	-	-	-	-	5	5	1
UDS	Department of Fisheries and Aquatic Resources Management	-	5	5	5	5	20	11
UENR	Department of Fisheries and Water Resources	-	5	5	5	4	19	6
Total			42	22	48	28	152	40

Source: FCMCBSP Evaluation Survey for Student Beneficiaries, January 23, 2020.

[124] AY= Academic Year

Table 41. Current Employment of Undergraduate and Graduate Students Who Benefitted from FCMCBSP[125]

	Undergraduate UCC	Undergraduate Other Four Universities[126]	Undergraduate Total	Graduate UCC	Graduate Other Four Universities	Graduate Total
Type of Employer						
Producer Organizations	0	0	0	0	0	0
Commercial Enterprises	0	2	2	0	0	0
Government—National	4	2	6	0	0	0
Government—Regional/District	1	0	1	3	0	3
International NGO	0	0	0	1	0	1
Local NGO	0	1	1	1	0	1
Donor-funded project	0	0	0	1	0	1
Graduate School	4	4	8	3	0	3
Free-lance consultant	0	0	0	0	0	0
Unemployed	5	9	14	5	0	5
Other	4	0	4	1	0	1
Type of employment						
Aquaculture	2	3	5	3	0	3
Fisheries	0	5	5	3	0	3
Coastal Management	4	0	4	5	0	5
Oceanography/Limnology	2	0	2	2	0	2
Other	10	11	21	2	0	2

Source: FCMCBSP Evaluation Survey for Student Beneficiaries, January 23, 2020.

[125] Methodology: The tracer study was designed using Google Forms and the link to the survey sent to all present and past students of DFAS. The primary channel of communication was email although other channels including WhatsApp groups and the DFAS Facebook page were employed in the dissemination of the survey. The exercise lasted from November 2019 to January 2020 targeting Alumni groups between 2006 and 2019. The feedbacks collated through the Google form was converted to Excel and analyzed.

[126] UG, UENR, UDS, and KNUST.

Table 42. Number of DFAS Students Who Graduated from 2006 to 2019

Year	BSc.	M.Phil.	Ph.D.
2006	44		
2007	52	1	
2008	33		1
2009	43		
2010	28		
2011	39	3	
2012	27	2	
2013	17	2	
2014	21	3	1
2015	8	1	
2016	31	4	1
2017	7	6	
2018	27	2	
2019	9*	1	

Source: FCMCBSP Evaluation Survey for Student Beneficiaries, January 23, 2020.

Table 43. Summary of Materials Posted on FCMCBSP-sponsored FishCoMGhana Online Database (January 2017 – February 2020)

	Reports	Abstract	Journal Articles (links)	Downloadable Documents	Total Materials and Comments on the Category
Aquaculture	1	51	13	38	52
Aquatic ecosystems	0	68	38	30	68
Capture fisheries	2	105	44	61	103
Coastal zones	0	62	27	29	62
Oceanography and limnology	0	5	0	5	5

Socio-ecological systems	0	2	1	1	2
Total					292

Source: FCMCBSP M&E Support Joshua Adotey, February 1, 2020

Table 44. Top 10 Countries That Access FishCoMGhana

S/N	Country	Users	% Users
1.	Ghana	2,331	44.99%
2.	United States	897	17.31%
3.	Japan	221	4.27%
4.	France	150	2.90%
5.	Brazil	118	2.28%
6.	Indonesia	112	2.16%
7.	Nigeria	104	2.01%
8.	India	97	1.87%
9.	China	92	1.78%
10.	United Kingdom	75	1.45%

Source: FCMCBSP M&E Support Joshua Adotey, February 1, 2020

Table 45. User Category and Access to FishCoMGhana (Dated February 16, 2020)

User Category	Number
Number of Users	5,179
One-Time Users	5,138
Returning Visitors	636
Downloads	961
Outbound-link	569
Page Views	13,897

Source: FCMCBSP M&E Support Joshua Adotey, February 16, 2020

Table 46. Total Number of FCMCBSP-sponsored Short-term Trainings By Year and Category of Training, FY 2015-present

Year	Course	Male	Female	Total[127]
2015	Climate Change	26	1	27
2016	Climate Change	12	7	19
2016	Fisheries Management	14	0	14
2016	Integrated Coastal Zone Management (ICZM)	11	2	13
2016	Introductory GIS	4	5	9
2017	Climate Change	19	15	34
2017	Fisheries Management	8	3	11
2017	ICZM	7	7	14
2017	Introductory GIS	9	5	14
2017	Intermediate GIS	16	9	25
2017	Training of Journalists	9	12	21
2018	Fisheries Management	14	7	21
2019	Climate Change	25	7	32
2019	Fisheries Management	11	7	18
2019	ICZM	25	8	33
2019	Introductory GIS	31	4	35
2019	Intermediate GIS	10	7	17
Total		251	106	357

Source: FCMCBSP M&E Support Joshua Adotey based on project M&E data. January 10, 2020

Table 47. Number and Themes of FCMCBSP-sponsored Workshops, FY 2016-FY 2019

Fiscal Year	Name of Workshop	Location (city)	Duration	Male	Female	Total Number
2016	Community-Based Fisheries Management Committee Initial Training	Moree, Central Region	May 16–18, 2016	19	5	24

[127] This figure is a summation of all participants who attended short-term training workshops without recourse to double counting of participants.

Fiscal Year	Name of Workshop	Location (city)	Duration	Male	Female	Total Number
2016	Community-Based Fisheries Management Committee Initial Training	Narkwa Community Centre, Central Region	May 14–15, 2016	12	8	20
2016	Community-Based Fisheries Management Committee Initial Training	Apam Fisheries Centre, Central Region	May 26 and 28, 2016	12	15	27
2016	Community-Based Fisheries Management Committee Initial Training	Ankobra, Western Region	May 24–25, 2016	11	10	21
2016	Community-Based Fisheries Management Committee Initial Training	Anlo Beach	June 12–14, 2016	10	4	14
2016	Community-Based Fisheries Management Committee Initial Training	Half-Assini Fisheries Centre, Western Region	May 21 and 23, 2016	10	14	24
2016	Community-Based Fisheries Management Committee Training Workshop	Elmina Central Region	June 10 and 18, 2016	27	9	36
2017	Business Development Training workshop	Anlo Beach, Shama District, Western Region	September 17–18, 2017	9	2	11
2017	Business Development Training workshop	Narkwa, Central Region	September 16, 2017	5	11	16
	Business Development Training workshop	Half-Assini, Western Region	September 19, 2017	4	9	13
2017	Business Development Training workshop	Ankobra	September 22–23, 2017	5	17	22
2017	Leadership and Management Training Workshop	Half-Assini	September 18, 2017	4	30	34
2017	Leadership and Management Training Workshop	Half-Assini	April 28, 2017	3	13	16
2017	Leadership and Management Training Workshop	Ankobra	April 25, 2017	7	8	15
2017	Leadership and Management Training Workshop	Anlo Beach	May 4–5, 2017	8	5	13

Fiscal Year	Name of Workshop	Location (city)	Duration	Male	Female	Total Number
2017	Leadership and Management Training Workshop	Narkwa Community Centre	May 18–19, 2017	7	20	27
2016	Trainer of Trainers Workshop for Coastal Communities Resource Management Committees	Hutchland Hotel, Cape Coast	May 4–5, 2016	25	2	27
Total				178	182	360

Source: FCMCBSP M&E Support Joshua Adotey based on project M&E data. January 10, 2020

Table 48. Summary Statistics on the Two FCMCBSP-sponsored Conferences in FY 2017 and FY 2019

	FY 2017	FY 2019
Location:	Accra	Accra
Number of days	3 days (25-27 September)	3 days (19-21 August)
Number of sessions	6 sessions	7 sessions
Number of abstracts	71	69
Approximate number of people who attended and any breakdown by category of gender	Total = 274 M = 189 F = 85	Total = 262 M = 185 F = 77
Total cost of the conference	USD 50,398.09	USD 121,073.13

Source: FCMCBSP M&E Support Joshua Adotey, based on project M&E data, February 10, 2020

Table 49. Consultants Used by the FCMCBSP by Institution, Activity, Number of Contracts, and Principal Outputs, FY 2015-FY 2019

Name of Consultant	Home Institution/Permanent Employment Base at Time of Consultancy	Fiscal Years Employed	Activities	Number of Contracts	Outputs
Dr. George Darpaah	Independent Consultant (Inchu Airsy Co. Ltd.)	2016 (6 months) 2017 (6 months) 2018-2019 (5 months)	Project Activity 2.1.2	3	-Three Technical reports -One Training workshop for Journalists -Validation workshops with stakeholders

Name of Consultant	Home Institution/Permanent Employment Base at Time of Consultancy	Fiscal Years Employed	Activities	Number of Contracts	Outputs
Dr. Benjamin Campion	Kwame Nkrumah University of Science and Technology (Iroko Consult Ltd.)	2015 (3 months) 2016 (8 months) 2017 (6 months) 2018-2019 (5 months)	Project Activity 2.2.5	4	-Three Technical reports -Establishment of FASoG -Organization of 2 fisheries conferences (CFCE 2017 and 2019) -Operationalization of JFCoM
Mrs. Cynthia Okine	Nature Today/ Forestry Commission	2016 (3 months) -2.2.4 only 2017 (1 month) -2.2.3 only 2017 (4 month) -2.2.4 only 2018-2019 (5 months)	Project Activity 2.2.1, 2.2.2, 2.2.3 & 2.2.4	5	-Developed training manual for GIS -Trained stakeholders in GIS, Climate Change, Coastal Management and Fisheries Management -Produced reports on training sessions
Mrs. Abena Adubea Acheampong	Private Individual	2015 (3 months) – 2.2.8 2016 (16 months) – 2.2.9 2017 (5 months) – 2.2.9	Project Activity 2.2.8 Project Activity 2.2.9	4	- Trained coastal community members in business management -Trained community members in supplementary livelihood activities -Produced reports on training activities - Synthesized Report of PLA/PRA Central and Western Region of Ghana
Ms. Anita Takura	Private Individual	2015 (2 months)	Project Activity 2.2.3	1	-Trained stakeholders in Climate Change short course
Prof. Patrick Kwabena Ofori-Danson	University of Ghana	2016 (8 months) 2016-2017 (6 months)	Project Activity 2.2.1	2	-Two technical reports on fish stock assessment

Name of Consultant	Home Institution/Permanent Employment Base at Time of Consultancy	Fiscal Years Employed	Activities	Number of Contracts	Outputs
Prof. Francis Nunoo	Department of Fisheries and Water Resources of the University of Energy and Natural Resources (UENR)	2016 (6 months) 2017 (1.5 months)	Project Activity 2.2.2	1	-Developed a manual on Fisheries Management -Trained stakeholders in Fisheries Management
Mr. Edwin Afari	World Cocoa Foundation	2015 (1 month)	Development of Monitoring and Evaluation Plan	1	Developed Monitoring and Evaluation Plan for the project
Ms. Rebecca Sabah	Private Individual	2015 (1 month)	Development of Gender Mainstreaming Plan	1	Developed of Gender Mainstreaming Plan for the project
Mr. Carl Korkpoe	Department of Finance, School of Business, UCC	2018-2019 (3 months)	Project Activity 1.2.3	1	-Trained students in R software
Drs. Daniel Adjei-Boateng and Regina Esi Edziyie	Kwame Nkrumah University of Science and Technology	2016 (3 months) 2017 (4 months)	Project Activity 2.1.5	2	-Two technical reports on ecological assessment of Awianu lagoon.
Mr. Jacob Ainoo-Ansah	Private Individual	2016 (3 months)	Development of a Business Plan for the Department of Fisheries and Aquatic Sciences (DFAS) and its Newly Created Centre for Coastal Management	1	-Developed a business plan for the Fisheries and Coastal Research Laboratory
Hen Mpoano		2016 (6 months) 2017 (7 months	Project Activity 2.1.5	2	-Two technical reports on wetland monitoring activity -Trained teachers to facilitate

Name of Consultant	Home Institution/Permanent Employment Base at Time of Consultancy	Fiscal Years Employed	Activities	Number of Contracts	Outputs
			Project Activity 2.2.7		
Computer House Technologies	Private Consulting Firm	2016 (5 months) 2019 (3 months)	Project Activity 2.1.6	2	-Developed the FishCoMGhana database -One progress report on the database development produced -Trained staff on management of the database
Dr. Kofi Abban	Council for Scientific and Industrial Research- (Water Research Institute)	2016 (6 months) 2017 (2 months)	Project Activity 2.2.1	2	-Developed training manual for Integrated Coastal Zone Management -Trained stakeholders in Integrated Coastal Zone Management
Dr. Leonard Amekudzi	Kwame Nkrumah University of Science and Technology	2016 (1 month) 2017 (2 months)	Project Activity 2.2.3	2	-Developed training manual for Climate Change Adaptation and mitigation -Trained stakeholders in Developed training manual for Climate Change Adaptation and mitigation
Mr. Gerard den Ouden	Private Consultant	2017 (1 month)	Project Activity 1.2.2	1	-Trained faculty and students in grantsmanship -Facilitated the development of strategic plan for DFAS
Prof. Kwaku Monney and Prof. Peter Kwapong	Department of Conservation Biology and Entomology, University of Cape Coast	2017 (5 months)	Project Activity 2.2.9	1	-Trained stakeholders in Bee-keeping and snail rearing
Ms. Pearl Sakyi-Djan	DFAS, UCC	2017 (6 months)	Project Activity 2.1.1	1	-Cuttle fish research

Name of Consultant	Home Institution/Permanent Employment Base at Time of Consultancy	Fiscal Years Employed	Activities	Number of Contracts	Outputs
					-Report on experimental cuttle fish research
Mr. Isaac Ekow Bossman	Private Individual	2017 (2 months)	Project Activity 2.1.1	1	-Cuttle fish research -Report on experimental cuttle fish research

Source: FCMCBSP M&E Support Joshua Adotey, January 10, 2020

Table 50. Examples of How SFMP's IRs and Activities Were Strengthened By Collaboration with FCMCBSP

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
IR 1: strengthening policy enabling environment				
Activity 1.1 Legal reform and co mgt meetings	UCC participation in events	Provided "experts" to participate	SFMP paid costs of workshops and participant travel per diem…hotels	
Activity 1.2.				
IR 2: please spell out				
Activity 2.1 Annual meetings of the Scientific and Technical Working Groups (STWG)	SFMP formed and supported the work and meetings of the STWG with the group's chair coming from UCC.	Time and level of effort of CCM members to the team were paid by CCM	SFMP paid for meeting venues, transport and per diem $8,000	A UCC Professor is the current Chair of the STWG, UCC recommended this representation be considered institutional, rather than based on the individual and looks forward to replacing the current individual with another UCC representative when the time comes. Academic participation in STWG makes it a more transparent and credible body to provide neutral science-based information to decision-makers. A hugely

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
Training of STWG in Fisheries Management	Joint Training	CCM provided venue for training and conference	SFMP paid for cost of conference, transport, consultant facilitator etc. $3,700	important factor in the fisheries sector in Ghana, which is highly politicized. CCM made tangible impacts on the transfer of academic knowledge and experience for improving the quality of fisheries assessment and management. CCM leadership of the STWG provided transparency by promoting access to information and engaging fishermen. CCM faculty and staff were provided with practical tools to fully engage in the fisheries assessment and management. MoFAD and FC calls are now seeking CCM's technical advice.
Activity 2.2 Trawler Policy Roundtables with Fisheries Commission and UCC	N/A	N/A	N/A	Chemical Fishing Guide: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwi-i_yM4ZznAhUtZN8KHR95AnkQFjAAegQIBhAB&url=https%3A%2F%2Fghanalinks.org%2Fdocuments%2F20181%2F0%2FA%2BPlanners%25E2%2580%2599%2BGuide%2Bto%2BIntegrated%2BCoastal%2BManagement%2Bin%2Bthe%2BCentral%2BRegion%2Bof%2BGhana%2F5d3f76fd-dbf8-48a1-a3ae-3cec87f020b3%3Fdownload%3Dtrue&usg=AOvVaw2E9atukaOD9ld3GItGG1iP
UCC Outreach center in Elmina	Design Support		SFMP allocated budget for an architect but activity was never implemented	
Coastal Fisheries Symposium	Joint Program	CCM supported with $20,000	SFMP supported with $60,000 for participant costs and venue rental and secretariat staff and was on org committee	
Forensic Guide and outreach	Joint Program	CCM provided students research assistance	SFMP paid for consultancy by UCC faculty and one grad student and cost of outreach $8,000	

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
Activity 2.3 (I believe this was a SFMP capacity development IR7 IR not sci for mt) Joint SFMP UCC Leadership training courses – cuttle fish collaborative research, early adopters and FC middle level management. Extension Agents	Joint Program CCM grad students worked the forensics guide and also outreach and training and citizen water quality sampling in the Densu w/ oyster harvesters Students also did participatory research with fishers on demersal stock assessment study	CCM provided students research assistance 2 Research Students from CCM	SFMP paid for cost of US training of trainers, part costs$34,000 SFMP paid for PHD stipend and cost of extension work for three years for the 2 student. $45,000 And Masters stipend for about 1 year and all research costs for the demersal study	CCM faculty and staff are offering similar training for local fisheries stakeholders. The rate of attendance remains high.
GIS training for district officers	SFMP involved CCM and Dept Geog in mapping work and training of	Not sure if we contracted the UCC tech support?	SFMP paid for the trainings and with subcontractor spatial solutions and Hen Mpoano	

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
	central region district officers.			
Training on use of small unmanned aerial vehicles	SFMP paid for URI consultant to train UCC pilots and how to download and analyze data for helicopter drone and a larger fixed wing…	SFMP paid costs of UAVs given to UCC and costs f trainings		CCM has taken over the drone program initiated with SFMP support. The drone has a five-year life expectancy and was transferred to CCM in August 2019. CCM now has three certified drone pilots and aims to map all of Ghana's coastal resources. Data and images used by students in their research. Networking with Western and Central Region Land Use and Spatial Planning Authority established.
IR 3: National conference				
Activity 3.1				
Activity 32				
Etc				
IR 4 Applied management				
Development Action Association (DAA)/DOPA Training and outreach for development of Densu Oyster Co-Management Plan	Water quality testing. Etc. etc.			Co-Management Plan developed. Resource user, academia, government NGO partnership model successfully demonstrated. DOPA women regularly monitoring water quality in the Densu Estuary.
IR 7 Capacity development				
Activity 4.1 Actions research between GITA and UCC on cuttlefish	Research	UCC provided research team	GITA paid some costs to UCC, SFMP provided tech guidance on a tagging study and consultants from URI, pad for	Taught a young faculty member and grad students how to do collaborative research with fisher folks and engage industry as well.

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
			tags and tagging guns and a few other pieces of equipment	
Activity 4.2 Provision of an otolith saw for fish age growth studies lab	Capacity development	Provided faculty and staff that were trained at URI US on aging otoliths and cutting prepping samples with the saw. UCC paid their airfares and per diems	URI paid for the saw, UCRC expert did in country training and organized stateside training.	The fisheries age and growth lab supported by SFMP is established. Due to student demand, space was expanded with shipping containers. UCC needs to add specialized saws. Faculty and students operate laboratory equipment and train new students in the use of age and growth techniques. The FC retained CCM for ageing tuna samples mandated by International Commission for the Conservation of Atlantic Tuna (ICCAT) (International organization)
10 Ph.D. students did a semester abroad at URI	Capacity development education	UCC paid their airfare and stipends	URI organized the mentor professors and enhancement seminars by CRC	Examples: Following exposure of these students to the "R" statistical package for data analysis, UCC engaged someone to train other students at UCC in "R". One of the URI semester PhD students who will be starting as a lecturer at UCC in September 2019 highlighted how the URI experience has shaped her approach to teaching and learning, "I am going to force each individual student to take measurements. Not as a group. Like in my URI practicum statistics class. Each student brings a laptop. From start to end you are on the laptop. Theory is interjected. This is a total flip from what we do, all theory. I learned to give the literature assignment ahead so that when you meet you discuss, not cover the literature. I also saw that the types of collaboration among professors there are stronger and more frequent. I will behave like that in my future – integrating the disciplines and the approaches. "Students improved research and writing

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
				skills through training and access to journals at URI.
11 undergrads at URI summer two week abroad program	education	UCC paid student airfares and stipends, and Dr. Asre accompanied as the UCC faculty leader/instructor	CRC paid for local costs of a van, and certain fees for events and admissions, and staff to act as co-trainers	
2 Masters 1 PHD student	Long-term capacity building	UCC on selection committee of candidates and guaranteed employment of persons on return from URI	SFMP paid costs of travel, tuition and fees, monthly stipend, costs for in-country research in Ghana during summer(s), CRC program coordinators and enhancement multidisciplinary seminars	https://www.crc.uri.edu/download/GH2014_SCI045_CRC_FIN508.pdf In general, the intense programs of study including required courses, extensive homework and rigorous research standards were facets of the experience at URI that could be beneficially transferred and applied to Ghanaian graduate education. One of the URI 2018 Masters' degree students funded under SFMP was on the team that drafted the successful ACECoR proposal. She and other UCC URI graduates are proposed as ACECoR Research Fellows. On his first day back in Ghana in 2019, the new PhD presented his thesis results on the sardinella fishery to the STWG. PhD student returned to Ghana and is considered for an assistant professor position at CCM.
Equipment training on use of gas chromatograph	training	UCC provided faculty/ lab tech, travel costs and lodging	URI provided a mentor faculty, program design at URI and coordinated all program logistics	
Shellfish Co-Management: Peer to Peer Study Tour to	Cap development	1 UCC female participant. Sheila Fynn Korsah.	URI fully funded and implemented.	https://www.crc.uri.edu/download/GH2014_ACT220_CRC_DAA_TRY_SNV_FIN508.pdf . Due to UCC participation in-depth demonstrations and exchanges on water

Intermediate Result and Numbered Activities of SFMP	Types of Collaboration	How the Collaboration Was Supported by UCC (in-kind and/or $)	How the Collaboration Was Supported by SFMP (in-kind and/or $)	Value Added of the Collaboration
Western Benin Oyster Communities	/Applied Management			quality monitoring by women themselves was led by Ghana oyster managers. UCC previously trained the Ghana women and this was their chance to demonstrate their knowledge and pass it on to others. UCC facilitated more analytical discussions of observed experience such as the value added, cost-effectiveness of wild stock management v. mariculture, among other topics. UCC participation was integral to demonstrating the effective partnership and networking models that was one of the key points of the study tour: women resource managers, academia, NGOs and government.
Prg Mgt				
Activity 5.1 Joint work planning meetings	planning	UCC usually provided venue but rotated Accra UCC Takoradi.	We agreed on activities that we would jointly do, or an activity that would enhance what UCC or we were doing or CSLP, each of the project would clarify role and budget contributions then these would go into respective work plans.	Enhanced collaboration based on mutually agreed work and needs
Activity 4.2				

Source: Deputy Chief of Party Enoch Ebo Appia and Chief of Party Dr. Raymond Babanawo, based on SMFP Product Data, January 23, 2020. And URI/CRC Program Manager Dr. Brian Crawford

Table 51. Evolution of Donor Funding[128] for CCM and DFAS, FY 2014-present

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
USAID		1385197	1015437	1152289	1098663	902249.6				
USAID/SFMP		200000	200000	200000	200000	200000				
National Geographic					16667	16667	16667			
The World Academy of Science					4470.5	4470.5				
Australian AID	60000									
DANIDA					300000	250000	250000			
French Embassy				4748.98						
Safe Fish							5000	5000	5000	
Skills Development Fund I		175000	175000							
Skills Development Fund II					50000	50000				
World Bank						457972	3722218	1148241	759156.8	312412.6

Source: FCMCBSP Communication Support Ernest Obeng Chuku, based on project data, January 23, 2020

[128] All figures are in US $

Table 52. Summary Statistics on the Journal of Fisheries and Coastal Management (FY 2018 – present)

	UCC	UG	KNUST	UENR	UDS	Ghana Government Institution (research or other)	Media	Other National	International —West African	International —Outside Africa	Unknown
Number of issues to date	2	1	0	1	0	0	0	0	0	0	0
# Editorial board members	4	1	0	0	0	0	0	4	1	3	0
Editor/ assistant editors (3)	8 editors + 6 editorial assistants	0	2	0	0	2	0	0	0	0	0
Total	14	2	2	1	0	2	0	4	1	3	0

Source: FCMCBSP M&E Support Joshua Adotey, based on project M&E data, February 16, 2020

Table 53. Overview of Manuscript Turn Around and Decision Time (FY 2018 – present)

Description	Number
Submitted Articles	25
Published Articles	4
Accepted Articles	4
Rejected Articles	10
Articles under review	11
Overall Decision Time	30 days
Total Download	533 (for all times)

Source: FCMCBSP M&E Support Joshua Adotey, February 16, 2020

Table 54. Number of Senior Professors at Other Ghanaian and Non-Ghanaian Universities Who Served on FCMCBSP-funded Student Committees Since FY 2015

S/N	Name of Professor	Title, Institution, and Relationship to DFAS and CCM	Number of the Students (M. Phil./Ph.D.) Supervised
1	Prof. K. A. Monney	Department of Conservation Biology & Entomology, UCC Served as consultant for Supplementary Livelihood Activity to train stakeholders	1 M.Phil. 2 Ph.D.
2	Prof. B.A. Mensah	Department of Conservation Biology & Entomology, UCC	5 M.Phil.
3	Mr. Ernest Kofi Amankwa Afrifa	Department of Environmental Science, UCC	2 M.Phil.
4	Dr. Samuel Kofi Tulashie	Department of Chemistry, UCC	1 Ph.D.
5	Prof. Frederick Ato Armah	Department of Environmental Science, UCC	2 M.Phil. 1 Ph.D.
6	Dr. Michael Miyittah	Department of Environmental Science, UCC	1 M.Phil.
7	Dr. Samuel K.M. Agblorti	Department of Population and Health, UCC	1 M.Phil.
8	Dr. Justus P. Deikumah	Department of Conservation Biology and Entomology, UCC	1 M.Phil.
9	Prof. Michael Buenor Adinortey	Department of Biochemistry, UCC	1 M.Phil.
10	Dr. Benjamin Campion	Department of Fisheries & Watershed Management Faculty of Renewable Natural Resources, KNUST Served as consultant for Activity 2.2.5 to engage policy makers to address coastal and fisheries issues	5 M.Phil.
11	Dr. Berchie Aseidu	Department of Fisheries and Water Resources, UENR	3 M.Phil.
12	Dr. Akwasi Ampofo-Yeboah	Department of Fisheries & Aquatic Resources Management Faculty of Natural Resources & Environment, UDS President of FASoG	1 M.Phil.
13	Dr. George Asare Darpaah	Department of Animal Biology and Conservation, UG Served as consultant for Activity 2.1.2 to research on marine and coastal governance issues	1 M.Phil.
14	Prof. F.K.E. Nunoo	Department of Marine & Fisheries Sciences, UG Served as consultant for Activity 2.2.2 to develop training manual for fisheries management	1 M.Phil. 1 Ph.D.
15	Prof. Rose E.M. Entsua-Mensah	Council for Scientific and Industrial Research (CSIR) Head Office	1 Ph.D.

S/N	Name of Professor	Title, Institution, and Relationship to DFAS and CCM	Number of the Students (M. Phil./Ph.D.) Supervised
16	Prof. Patrick Kwabena Ofori-Danson	Department of Marine & Fisheries Sciences, UG Served as consultant for Activity 2.1.1 to research on Cuttle Fish	1 M.Phil. 1 Ph.D.
17	Prof. Nelson Winston Agbo	Department of Fisheries & Watershed Management, KNUST	1 Ph.D.
18	Dr. Daniel Adjei-Boateng	Department of Fisheries & Watershed Management Faculty of Renewable Natural Resources, KNUST Consultant on Activity 2.1.5 to research on the biodiversity and health of coastal ecosystems with special focus on Awianu Lagoon	1 M.Phil.
19	Dr. Elliot Haruna Alhassan	Department of Fisheries & Aquatic Resources Management Faculty of Natural Resources & Environment, UDS	1 M.Phil.

Source: FCMCBSP M&E Support Joshua Adotey, February 1, 2020

ANNEX VI: TECHNICAL REVIEW OF THE FCMCBSP MARINE AND COASTAL RESEARCH AND RESOURCE ASSESSMENTS (ACTIVITY 2.1.1-2.1.5) AND MARINE AND COASTAL FISHERIES DATABASE (2.1.6).

Technical Review of USAID/Ghana's University Of Cape Coast (UCC) Fisheries And Coastal Management Capacity Building Support Project Output—Activity 2.1: Increased Marine And Coastal Research And Resource Assessments

By

Dr. Evans Kwasi Arizi

Prof. Denis Worlanyo Aheto[129]

[129] The authors of this report wish to express their immense gratitude to Della McMillan and Lynn Hurtak for the guidance in completing this assignment. The authors are equally thankful to some members of the FCMCBSP team for their insightful contributions in the form of comments and provision of documentation in support of this work. The members are: Dr. Noble Asare, Head of Department of Fisheries and Aquatic Sciences, and M&E Coordinator of the USAID/Ghana UCC Fisheries and Coastal Management Capacity Building Support Project (USAID/Ghana UCC FCMCBSP); Mr. Joshua Adotey, M&E Support, USAID/Ghana UCC FCMCBSP; Ms. Esinam Attipoe, Project Management Support; and Mr. Ernest Chuku, Research Assistant on the project.

1.0. BACKGROUND CONTEXT

1.1. GOAL OF THE REVIEW

The objective of this review is to document the scientific studies conducted under the five-year (2014-2019) USAID-supported Fisheries and Coastal Management Capacity Building Support Project (FCMCBSP) and provide an overview of the methods used in the five studies and assessments conducted over the period. It is further intended to show how these results have been used and what additional data collection work or analyses were conducted or are in the process of being conducted by the graduate students (Doctor of Philosophy [Ph.D.] and Master of Philosophy [M.Phil.]) associated with the activities.

1.2. ORIGINAL VS. ACTUAL METHODOLOGY FOR THE FIVE STUDIES

1.2.1. Methodology Envisioned: In the original proposal, FCMCBP expected the five research studies and assessments (Activities 2.1.1–2.1.5) and online database (FishCoMGhana) (Activity 2.1.6) would be executed by University of Cape Coast (UCC) faculty. Once the FCMCBSP contract was signed and project activities initiated, however, it became clear the project could not fulfill this intention due to high student numbers as well as the huge teaching and research responsibilities of faculty as a result of the project. This situation led to the engagement of consultants from sister Ghanaian universities to augment local staff capacity at Department of Fisheries and Aquatic Sciences (DFAS). There was originally also an expectation that the five research studies would strengthen the core organizational and human capacity of UCC (PIR 1) by using graduate students and undergraduates to collect some of the data for the core or complementary studies. The cost of the consultants and their baseline studies was supported in the budget under each study (Activities 2.1.1–2.1.5); the cost of the students was supported under the budget for support for short-graduate training (Activity 1.2.3) and undergraduate research grants (Activity 1.2.4).

1.2.2. Actual Methodology As It Evolved: When the contract was signed, it became clear that its language would not compensate the use of faculty time for conducting research. To address this issue, the project advertised the consultancies nationally in an open competitive bid (*i.e.,* to open the field to other experts in different academic and non-academic disciplines to apply) using the standard UCC procurement processes, which required each consultancy team to respond to the terms of reference in a proposal with a detailed intention, methodology, and budget for the baseline research and assessments of each study. This competitive process resulted in FCMCBSP hiring four teams of researchers to: 1) produce three of the five research studies; and 2) design the FishCoMGhana online database (Table A). Each of these studies had DFAS professors as operational leads (Table A). The postgraduate students (Ph.D. and M.Phil.) were supervised by principal and co-supervisors (Table B). Two of the studies—the Research on Fish and Shellfish of Commercial Value and the Analysis of Value Chains of Fish Trade—were led by two senior DFAS professors.

In each of the three consultant-led studies, there was an initial baseline study which produced a report that included some of the data (identified in the original Statement of Work [SOW]) needed for a specific policy purpose, or in some cases was tied to a very specific policy. The baseline studies by the consultants also served as a basis for further research investigations by the students.

To date, 188 students were involved in the FCMCBSP scientific studies and research assessments—36 UCC post-graduate students (61 percent females and 39 percent males), 80 UCC undergraduates, and 72 undergraduates from UCC's sister fisheries departments (Table A); about 30 precent of the undergraduate students were female.[130] Out of 36 graduate students, one died (Fredrick Ekow Jonah) in the course of his Ph.D. program, one withdrew (Simon Kyei Gyimah), and five Ph.D. students and one M.Phil. student are on track to complete their work for submission to DFAS. However, all the undergraduate students have completed their studies and submitted to their various departments. Activities 2.1.1–2.1.5 were divided into thematic areas and each graduate student was required to write a research proposal centered on one of these areas. Subsequently, students presented their research proposals in a series of seminars attended by DFAS faculty members and students. These research proposals were constructively criticized and scrutinized by the scientific audience made up of both faculty members and students of DFAS and, in some cases, colleagues from cognate departments to ensure each student would do quality research. As for the undergraduate students, they chose topics from a list provided by their university supervisors. There was no co-authorship among the students as far as their dissertations and theses are concerned.

[130] This number is correct but does not match with documentation on the students in this report since the full list is yet to be compiled (Pers. Comm. Prof. Denis W. Aheto; February 27, 2020).

Table A. Number of Consultants, Graduate Students, Undergraduate Students,[131] and Other Researchers Involved in the Five FCMCBSP Increased Marine and Coastal Research and Resource Assessments[132]

Name of FCMCBSP Activity (Activity number)	Lead Consultant and Consultant Team and His/Her Home Institution	Lead Person Who Oversaw This Study at UCC	Number and Name of Graduate Students Who Worked in the Baseline Study and Follow-Up Studies and Status of Their Dissertation/Thesis	Number and Name of Undergraduate Students Who Worked on the Studies and Department and Institution They Were Attached To
Conducting Fisheries Stock Assessment (Activity 2.1.1)	Prof. Patrick Ofori Danson[133]	Prof. John Blay, DFAS, UCC	1. Jemimah Etornam Kassah (PS, DS) 2. Michelle Clottey (PS, DS) 3. Miriam Yayra Ameworwor (PS, ID) 4. Eugenia Amador (MS, TS) 5. Paulina Okpei (MS, TS)	1. Emmanuel Sandy Ofosu (UCC) 2. Nana Manso Frempong (UG) 3. Myra Wewoli Wonje (UG)
Conducting Research and Assessment on Marine Fisheries Governance Issues (Activity 2.12)	-Dr. George Darpaah (Lead consultant)[134] -Dr. Benjamin Betey Campion[135]	Prof. Denis W. Aheto, DFAS	Justina Annan (MS, TS)	Perpetual Adonu (UDS)
Research on Fish and Shellfish of Commercial Value (Activity 2.1.3)	N/A	Prof. Kobina Yankson, DFAS	1. Lawrence Armah Ahiah (PS, DS) 2. Isaac Osei Kofi (PS, DS) 3. Rhoda Lims Osae Sakyi (PS, DS) 4. Ebenezer Delali Kpelly (PS, ID) 5. Kezia Baidoo (MS, TS) 6. Mercy Johnson-Ashun (MS, TS) 7. William Dogah (MS, TS) 8. Prince Dela Tseku (MS, TS) 9. Bright Asare (MS, TS) 10. Grace Nikoi Olai (MS, TS) 11. Ernest Chuku (MS, TS)	1. Samuel Ayitey (UCC) 2. Francis Bismark Odoom (UCC) 3. Michael Yeboah (UCC) 4. Daniel Onwonah-Owiredu (KNUST) 5. Adwoa Twumwaah Gyapon (KNUST) 6. Richard Appiah-Kubi (KNUST) 7. Freda Sarfo (UDS) 8. Gertrude Dzifa Mensah (UDS)

[131] Not all the names of the undergraduate students were captured in this table because, at the time this report was being prepared, some students of the sister universities had not submitted their dissertations to DFAS for review.
[132] Acronyms for Degrees: PS = Ph.D. student; MS = M. Phil. student; DS = Dissertation submitted; ID = Incomplete Dissertation; TS = Thesis Submitted; IT = Incomplete Thesis. Acronyms for undergraduate students' home institutions: KNUST = Kwame Nkrumah University of Science and Technology; UCC = University of Cape Coast; UDS = University of Development Studies; UENR = University of Energy and Natural Resources; and UG = University of Ghana.
[133] Full Professor, Department of Marine and Fisheries Sciences, University of Ghana (UG), Legon.
[134] Senior Lecturer, UG.
[135] Senior Lecturer, Department of Fisheries and Watershed Management (DFWM), Kwame Nkrumah University of Science and Technology (KNUST), Kumasi.

Name of FCMCBSP Activity (Activity number)	Lead Consultant and Consultant Team and His/Her Home Institution	Lead Person Who Oversaw This Study at UCC	Number and Name of Graduate Students Who Worked in the Baseline Study and Follow-Up Studies and Status of Their Dissertation/Thesis	Number and Name of Undergraduate Students Who Worked on the Studies and Department and Institution They Were Attached To
			12. Simon Kyei Gyimah (MS)[136]	9. Kwabena Anane (UDS) 10. Peter Bilijobiba Kamonjado (UENR) 11. Isaac Awuni (UENR) 12. Gordon Kwame Kuma (UENR) 13. Comfort Adwoa Nyan (UENR) 14. Linda Sarfoah (UENR) 15. Emmanuel Sesi Acolatse (UENR) 16. Fred Bissih (UENR) 17. Iddrisu Hardi Tia (UENR) 18. Georgina Anthea Ama Ofori (KNUST) 19. Regina Amissah (KNUST) 20. Foster Afram (KNUST) 21. Evans Owusu-Ansah (KNUST) 22. Pamela Pardie Parnakie (KNUST) 23. Goddey Atitsogbui (KNUST) 24. Favour Adedze (KNUST) 25. Owusuaa Afua Asubonteng (KNUST) 26. David Attim Abass (KNUST) 27. Amponsah Kwaku Andoh (KNUST) 28. Vandyck Owusu (KNUST) 29. Eunice Efua Boahemaa-Kobil (UCC) 30. Elizabeth Agyekumwaa (UCC) 31. Alex Asomeni Boateng (UCC) 32. Solomon Tetteh Odjelua (UCC)

[136] Withdrawn student

Name of FCMCBSP Activity (Activity number)	Lead Consultant and Consultant Team and His/Her Home Institution	Lead Person Who Oversaw This Study at UCC	Number and Name of Graduate Students Who Worked in the Baseline Study and Follow-Up Studies and Status of Their Dissertation/Thesis	Number and Name of Undergraduate Students Who Worked on the Studies and Department and Institution They Were Attached To
				33. Isaac Morris (UCC) 34. Christian Normegbor (UCC) 35. Jacob Zornu (UCC) 36. Bernard Yeboah Assiam (UCC) 37. Evans Davies (UCC) 38. James Akusi Abarike (UCC) 39. Timothy Kow Dawson Amuah (UCC) 40. Williams Ofosuhene (UCC) 41. Juliet Afrah Obeng (UCC) 42. (UCC) 43. Kwadwo Appiah-Baah (UCC) 44. Richmond Asante (UCC) 45. Maswud Siba Mohammed (UCC) 46. Edna Arthur (UCC) 47. Mohammed Alhassan Kassim (UCC) 48. Razak Shaibu (KNUST)
Analysis of Value Chains of Fish Trade (Activity 2.1.4)	N/A	Prof. Denis W. Aheto	Lesly Ntim (PS, DS)	1. Daniel Assan (UDS) 2. Sualisu Abdul Mumin (UDS) 3. Abu Wildan Osman (UDS) 4. Nicholas Darku (UDS) 5. Danquah Isaac (UDS) 6. Yusif Ansau (UDS) 7. Sumaiya Yakutu (UDS) 8. Benjamin Kettey-Tagoe (UDS) 9. Afriyie Gyamfua (UENR) 10. Melody Abena Anokyewaa (UENR) 11. Kwabena Sakyi (UENR) 12. Shammah Akua Agyare (KNUST)

Name of FCMCBSP Activity (Activity number)	Lead Consultant and Consultant Team and His/Her Home Institution	Lead Person Who Oversaw This Study at UCC	Number and Name of Graduate Students Who Worked in the Baseline Study and Follow-Up Studies and Status of Their Dissertation/Thesis	Number and Name of Undergraduate Students Who Worked on the Studies and Department and Institution They Were Attached To
Monitor the Biodiversity and Health of Coastal Ecosystems (Activity 2.1.5.)[137]	-Dr. Daniel Adjei-Boateng (Lead consultant)[138] -Dr. Regina Esi Edziyie[139] -Dr. Kwasi Obirikorang[140]	Prof. Denis W. Aheto	1. Rebecca Kyerewa Essamuah (PS, ID) 2. Gertrude Lucky Aku Dali (PS, ID) 3. Alberta Jonah (PS) 4. Elizabeth Effah (PS, DS) 5. Sheila Fynn Korsah (PS, ID) 6. Rahmat Quaigrane Duker (PS) 7. Margaret Fafa Dzakpasu (PS) 8. Fredrick Ekow Jonah (PS)[141] 9. Delove Abraham Asiedu (MS, IT) 10. Bernard Assiam (MS, TS) 11. Success Adjeley Sowah (MS, TS) 12. Gabriel Gator (MS, TS) 13. Daniel Agyei (MS, TS) 14. Elsie Akushika Debrah (MS) 15. Divine Hotor Worlanyo (MS, TS) 16. Pearl Sakyi-Djan (MS, TS) 17. Nunana Agbemebiese (MS, TS)	1. Priscilla Dzidzor Nego (UDS) 2. Francis Kofi Donkor (UDS) 3. Rakib Karim M. Abdul (UDS) 4. Zainab Mohammed Umar (UG) 5. Kofi Oppong-Mensah (UG) 6. Fidelia Esenam Bandua (UG) 7. Nicole Efua Agyankomaa Otoo (UENR) 8. Samuel Twumasi (UENR) 9. Prince Kissi Boadum (UENR) 10. Deborah Addai-duodu (KNUST) 11. Wilfred Agbi (KNUST) 12. Elvis Quainoo (KNUST) 13. Delove Abraham Asiedu (UCC) 14. Gabriel Gator (UCC) 15. Esther Nyamekye Acheampong (UCC) 16. Dominic Duncan Mensah (UCC) 17. Florence Dzidzor Fleku (UCC) 18. Irene Owusuwaah (UCC) 19. Fredrick Asante (UCC) 20. Priscilla Mantey (UCC) 21. Benjamin D. Gawornu (UCC) 22. Justice Yeboah (UCC) 23. Richmond Korang (UCC) 24. Fred Kwaku Ahiati (UCC)

[137] The studies conducted by the consultants and students under this activity had no connections with any community-based activities.
[138] Senior Lecturer, DFWM, KNUST, Kumasi.
[139] Senior Lecturer, DFWM, KNUST, Kumasi.
[140] Senior Lecturer, DFWM, KNUST, Kumasi.
[141] Passed on (died) in the course of his Ph.D. program.

Name of FCMCBSP Activity (Activity number)	Lead Consultant and Consultant Team and His/Her Home Institution	Lead Person Who Oversaw This Study at UCC	Number and Name of Graduate Students Who Worked in the Baseline Study and Follow-Up Studies and Status of Their Dissertation/Thesis	Number and Name of Undergraduate Students Who Worked on the Studies and Department and Institution They Were Attached To
				25. David Siaw Gyimah (UCC) 26. Richmond Osei Agyemang (UCC) 27. Gabriel Takyi (UCC) 28. Justice Nana Bentum (UCC) 29. Martin Bog-Yena Kannyir (UCC) 30. Maxwell Omane Henneh (UCC) 31. Martin Opoku (UCC) 32. Daniel Boakye (UCC) 33. Derek Senam Nutsugah (UCC) 34. Mercy Sekum (UCC) 35. Benjamin Dentu Yeboah Ntow (KNUST) 36. Kenneth Appiah (KNUST) 37. Emmanuel Owusu Ansah Antoh (KNUST)
Developing Marine and Coastal Fisheries Database, FishCoMGhana (2.1.6)	Mr. Robert Sewanu[142]	Dr. Emmanuel Acheampong	N/A	N/A

Source: Dr. Evans Kwasi Arizi. Collated from FCMCBSP Records; February 15, 2020.

[142] Chief Executive Officer, Computer House Technologies

Table B. Graduate Students, Title of Their Studies and Their Supervisors Involved in the Five FCMCBSP Increased Marine and Coastal Research and Resource Assessments

FCMCBSP Activities (2.1.1 -2.1.5)	Title of Study	Name of Graduate Student[143]	Major Supervisor	Co-supervisor
2.1.1 Conducting Fisheries Stock Assessment	Aspects of the biology and length-based assessment of the Atlantic chub mackerel *Scomber colias* (Scombridae) stock off the coast of Ghana	Jemimah Etornam Kassah (PS)	Prof. John Blay [144]	Dr. Najih Lazar[145]
	Population dynamics and reproductive studies of three commercially important sparid species from Ghanaian waters	Michelle Clottey (PS)	Prof. Joseph Aggrey-Fynn[146]	Prof. John Blay
	Observations on the bottom-set gillnet fishery and the biology of selected species at three locations off the Central Region coast of Ghana	Miriam Yayra Ameworwor (PS)	Prof. John Blay	Prof. Joseph Aggrey-Fynn
	Stock assessment and some aspects of reproduction of two fish species in Ghanaian waters	Eugenia Amador (MS)	Prof. Joseph Aggrey-Fynn	Prof. John Blay
	Toward sustainable exploitation of penaeid shrimps in the Ghanaian Gulf: A review of the status of the fishery	Paulina Okpei (MS)	Prof. Joseph Aggrey-Fynn	Dr. Isaac Okyere[147]

[143] PS = Ph.D. student; MS = Master's student
[144] Prof. John Blay is a Full Professor at DFAS, UCC
[145] Dr. Najih Lazar is a Technical Advisor at Coastal Resources Center (CRC), University of Rhode Island (URI).
[146] Prof. Joseph Aggrey-Fynn is an Associate Professor at DFAS, UCC.
[147] Dr. Isaac Okyere is a Junior Lecturer at DFAS, UCC.

FCMCBSP Activities (2.1.1 -2.1.5)	Title of Study	Name of Graduate Student[143]	Major Supervisor	Co-supervisor
	Aspects of the biology and population dynamics of *Sphyraena sphyraena, Apsilus focus, Cynoglossus senegalensis* in Ghanaian coastal waters	Divine Hotor Worlanyo (MS)	Prof. Joseph Aggrey-Fynn	Prof. John Blay
	Assessment and characterization of the lobster (Palinuridea) fishery in Ghana	Sheila Fynn Korsah (PS)	Prof. Joseph Aggrey-Fynn	Dr. Isaac Okyere
2.1.2 Conducting Research and Assessment on Marine Fisheries Governance Issues	Assessment of traditional governance systems in support of artisanal fisheries management in the Western Region of Ghana	Justina Annan (MS)	Prof. Denis W. Aheto[148]	Prof. Edward A. Obodai[149]
2.1.3 Research on Fish and Shellfish of Commercial Value	Crossbreeding of four populations of Black-chinned tilapia (*Sarotherodon melanotheron*) from Ghana	Lawrence Armah Ahiah (PS)	Prof. Kobina Yankson[150]	Prof. John Blay
	A study on the fishery, aspects of the biology and culture of the West African mangrove oyster, *Crassostrea tulipa* in the Densu Delta, Ghana	Isaac Osei Kofi (PS)	Prof. Kobina Yankson	Prof. Edward A. Obodai
	Development of PCR-based methods for diagnosis of fungal infections in cultured fish (*Oreochromis niloticus*) in Ghana	Rhoda Lims Osae Sakyi (PS)	Prof. Kobina Yankson	Dr. Mike Osei-Atweneboana[151]

[148] Prof. Denis W. Aheto is an Associate Professor at DFAS, UCC.
[149] Prof. Edward A. Obodai is a Full Professor at DFAS, UCC.
[150] Prof. Kobina Yankson is a Full Professor at DFAS, UCC.
[151] Dr. Mike Osei-Atweneboana is the Director at the Water Research Institute (WRI) of Council for Scientific and Industrial Research (CSIR), Ghana.

FCMCBSP Activities (2.1.1 -2.1.5)	Title of Study	Name of Graduate Student[143]	Major Supervisor	Co-supervisor
	Aspects of the nutrition of the blackchin tilapia (*Sarotherodon melanotheron*)	Ebenezer Delali Kpelly (PS)	Prof. John Blay	Prof. Joseph Aggrey-Fynn
	Utilization of two brackish water systems near Cape Coast (Ghana) as nurseries for juvenile marine fishes	Kezia Baidoo (MS)	Prof. John Blay	Dr. Noble K. Asare[152]
	Effects of ginger and garlic supplements on culture performance of blackchin tilapia (*Sarotherodon melanotheron*)	Mercy Johnson-Ashun (MS)	Prof. Kobina Yankson	Dr. Emmanuel Acheampong[153]
	Studies on aspects of the biology of *Clarias gariepinus* and *Heterobranchus longifilis* from river Offin; toward their culture development in Ghana	William Dogah (MS)	Prof. Edward A. Obodai	Dr. George Darpaah[154]
	Performance of the black chinned tilapia, *Sarotherodon melanotheron* fed different formulated feeds in a reservoir	Prince Dela Tseku (MS)	Prof. Kobina Yankson	Dr. Emmanuel Acheampong
	Aquaculture potential of the West African mangrove oyster (*Crassostrea tulipa*): a case study of the species in the Nakwa Lagoon of Ghana	Bright Asare (MS)	Prof. Edward A. Obodai	Dr. Emmanuel Acheampong

[152] Dr. Noble K. Asare is a Senior Lecturer and Head of DFAS, UCC.
[153] Dr. Emmanuel Acheampong is a Senior Lecturer at DFAS, UCC.
[154] Dr. George Darpaah is a Senior Lecturer at the Department of Marine and Fisheries Sciences (DMFS), University of Ghana (UG).

FCMCBSP Activities (2.1.1 -2.1.5)	Title of Study	Name of Graduate Student[143]	Major Supervisor	Co-supervisor
	Some water quality parameters and aspects of reproductive biology of the West African mangrove oyster (*Crassostrea tulipa*) in two lagoons in Ghana	Grace Nikoi Olai (MS)	Prof. Kobina Yankson	Prof. Edward A. Obodai
	Strategies for optimizing spat collection and growth of the oyster for its mass production in the coastal water bodies of Ghana	Ernest Chuku (MS)	Prof. Kobina Yankson	Prof. Edward A. Obodai
2.1.4 Analysis of Value Chains of Fish Trade	Value chain analysis of the croakers (*Pseudotolithus senegalensis* and *Pseudotolithus typus*) in the Ghanaian fishery	Lesly Ntim (PS)	Prof. Denis W. Aheto	Prof. John Blay
2.1.5 Monitor the Biodiversity and Health of Coastal Ecosystems	Toward developing a decision support system (DSS) for prioritizing conservation of coastal zone ecological spaces in urban areas of Ghana: a case study of the Fosu Lagoon	Rebecca Kyerewa Essamuah (PS)	Prof. Denis W. Aheto	Dr. Emmanuel Acheampong
	Assessment of the health of mangrove forests in the Kakum and Pra Estuaries in Ghana	Gertrude Lucky Aku Dali (PS)	Prof. Denis W. Aheto	Prof. John Blay
	Assessment of coastal ecosystems in the Greater Cape Three Points area toward its designation as marine protected area in Ghana	Alberta Jonah (PS)	Prof. Denis W. Aheto	Dr. Isaac Okyere

FCMCBSP Activities (2.1.1 -2.1.5)	Title of Study	Name of Graduate Student[143]	Major Supervisor	Co-supervisor
	Assessment of the ecological and human health implications of heavy metals and microbial load content of the Ankobra River, Ghana	Elizabeth Effah (PS)	Prof. Denis W. Aheto	Dr. Emmanuel Acheampong
	Distribution and eco-toxicological effects of PAHs in selected lagoons in Ghana	Rahmat Quaigrane Duker (PS)	Prof. Edward A. Obodai	Dr. Noble K. Asare
	Ecological assessment of some coastal lagoons and estuaries in Ghana: abiotic and biotic approaches	Margaret Fafa Dzakpasu (PS)	Prof. Kobina Yankson	Dr. Emmanuel Lamptey[155]
	Mesozooplankton abundance and impact of selected human-induced stressors on calanoid copepod in the marine coastal waters of Ghana	Delove Abraham Asiedu (MS)	Dr. Noble K. Asare	Dr. Emmanuel Acheampong
	Ecological studies of the Fosu Lagoon using remote sensing application	Bernard Assiam (MS)	Prof. Denis W. Aheto	Dr. Isaac Okyere
	Assessment of water quality of three coastal water bodies toward the culture of oysters in Ghana	Success Adjeley Sowah (MS)	Prof. Kobina Yankson	Dr. Noble K. Asare
	Morphology and microstructure of otoliths of juvenile fish species from the coastal waters of Ghana	Gabriel Gator (MS)	Prof. John Blay	Prof. Kobina Yankson

[155] Dr. Emmanuel Lamptey is a Senior Lecturer at DMFS, UG.

FCMCBSP Activities (2.1.1 -2.1.5)	Title of Study	Name of Graduate Student[143]	Major Supervisor	Co-supervisor
	A new tool to improve fisheries monitoring, surveillance, and control capabilities in Ghana	Daniel Agyei (MS)	Prof. Denis W. Aheto	Dr. George Darpaah
	Mapping potential fishing zones in support of inshore fisheries management in Ghana	Elsie Akushika Debrah (MS)	Prof. Denis W. Aheto	Dr. George Darpaah
	Habitat distribution and seasonal abundance of *Sepia hierredda* in Ghana	Pearl Sakyi-Djan (MS)	Prof. Joseph Aggrey-Fynn	Dr. Najih Lazar
	Characterization and quantification of litter on selected beaches in the central region of Ghana: toward the management and proper disposal of solid waste	Nunana Agbemebise (MS)	Prof. Denis W. Aheto	Prof. John Blay

Source: Dr. Evans Kwasi Arizi. Collated from FCMCBSP Records; February 15, 2020.

2.0. ACTIVITY 2.1.1 CONDUCTING FISHERIES STOCK ASSESSMENTS

2.1. BACKGROUND AND ORGANIZATION OF THE STUDY

This activity assessed the status of commercially important fish stocks inhabiting the coastal waters of Ghana with an ultimate aim of providing scientific information for making rational and sound policies for managing the marine fisheries of Ghana. A consultant assessed the status of some demersal fish of economic importance, and some students whose research areas focused on this activity conducted independent studies on some commercially important fish species not captured in the consultant's work to produce dissertations and theses.

2.2. OBJECTIVES, ORGANIZATION, AND METHODOLOGY OF THE BASELINE STUDY

The baseline study under Activity 2.1.1 sought to:

- Identify different measures of effort in the marine fisheries;
- Determine the most reliable measure of catch per unit effort (CPUE) for the various fleets in the fisheries;
- Compare the size distribution of the key fish species with previous records;
- Estimate growth and mortality parameters and exploitation levels of the key species in the fisheries; and
- Generate a model for fishery management predictions.

These objectives were clearly stated, measurable, achievable, and relevant to address the research. Conventionally acceptable methods were used to achieve these objectives: length-based assessment method for estimation of the growth and mortality parameters and the exploitation rates of the fish stocks; Beverton-Holt yield per recruit model and surplus production models such as Schaefer and Fox models for estimating the Maximum Sustainable Yield (MSY) of the fish stocks per fleet.[156] The baseline study was conducted over a period of four months (February to May 2016) by Professor Patrick Ofori Danson of the University of Ghana (UG), Legon at a cost of $35,714.28. A report of this short study was subsequently prepared and submitted on June 7, 2016 to DFAS, UCC. No student sponsored under FCMCBSP was involved in this baseline study.

2.3. OBJECTIVE, ORGANIZATION, AND METHODOLOGY OF THE FOLLOW-UP STUDIES

2.3.1. Follow-up Studies by the Consultant: A follow-up study was undertaken by the same consultant with the primary aim of obtaining reliable results to make rational policies for managing the marine fisheries of Ghana. Since the follow-up study was an extension of the baseline study, the same

[156] DFAS. (2016) Mid-term Report on Fisheries Stock Assessment of Some Selected Commercially Important Marine Fish Stocks in Ghana. Cape Coast: University of Cape Coast for the USAID/Ghana UCC FCMCBSP. (June) (unpublished manuscript). (FishCoMGhana; *http://www.fishcomghana.com*).

objectives and methods were pursued to obtain the results.[157] The latter research also covered a period of four months (June to September 2016) at a cost of $17,857.14. At the end of the follow-up research, a final report was prepared and submitted in October 2016 to DFAS, UCC.

2.3.2. Follow-up Studies by UCC Graduate Students: The works of the students were supervised by experienced DFAS faculty members to ensure quality results were obtained; their methods are conventionally acceptable. The detailed description of the research methods and systematic presentation of the findings in the various reports produced by the researchers are testimonies of the quality of the studies.

2.3.2.1. Fish Species of Economic Importance: Some students sponsored under FCMCBSP had their studies centered on fisheries stock assessment with respect to different fish species of economic importance.

- Jemimah Etornam Kassah[158] employed the length-based assessment method to assess the Atlantic chub mackerel (*Scomber colias)* (Scombridae) stock off the coast of Ghana from February 2016 to July 2017, and later produced a Ph.D. dissertation which was submitted to DFAS in September 2019 under the supervision of Prof. John Blay and Dr. Najih Lazah of the Coastal Resources Center (CRC), University of Rhode Island (URI).
- Michelle Clottey[159] assessed Bluespotted seabream (*Pagrus caeruleostictus)*, Canary dentex (*Dentex canariensis),* and Pink dentex (*Dentex gibbosus)* stocks in the coastal waters of Ghana and also produced a Ph.D. dissertation, submitted to DFAS in December 2019 under the supervision of Prof. Joseph Aggrey-Fynn (DFAS) and Prof. John Blay (DFAS).
- Miriam Yayra Ameworwor (in prep)[160] assessed the bottom-set gillnet fishery with focus on some key fish species, and she is in the process of completing a Ph.D. dissertation to be submitted to DFAS. Her work was supervised by Prof. John Blay (DFAS) and Prof. Joseph Aggrey-Fynn (DFAS).
- The work of Eugenia Amador[161] focused on estimating the reproductive capacities, growth, mortality parameters, and exploitation rates of Golden African snapper (*Lutjanus fulgens*) and Largehead hairtail (*Trichiurus lepturus*). Her study covered a period of one year (September 2018 to August 2019) under the supervision of Prof. Joseph Aggrey-Fynn (DFAS) and Prof. John Blay (DFAS); it is yet to be submitted as a thesis to DFAS for M.Phil. degree in Fisheries Science.
- Paulina Okpei[162] investigated the exploitation rate of penaeid shrimps in the Ghanaian marine waters under the supervision of Prof. Joseph Aggrey-Fynn and Dr. Isaac Okyere. She produced a Master's thesis and submitted it to DFAS.
- Emmanuel Ofosu[163] investigated the CPUE of Nile tilapia fishery of the Kakum Lake at Brimsu in Ghana. He produced a Bachelor of Science (B.Sc.) dissertation and submitted it to DFAS under the supervision of Mr. Joseph S. Debrah.[164]

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[157] DFAS. (2017a). The USAID/Ghana UCC Fisheries and Coastal Management Capacity Building Support Project. Final Performance Report on Fisheries Stock Assessment of Some Selected Commercially Important Marine Fish Stocks in Ghana. Cape Coast: University of Cape Coast for the USAID/Ghana UCC FCMCBSP. (FishCoMGhana; http://www.fishcomghana.com)

[158] Kassah, J. E. (2019). Aspects of the biology and length-based assessment of the Atlantic chub mackerel (*Scomber colias)* (Scombridae) stock off the coast of Ghana. Ph.D. dissertation. UCC, Cape Coast.

[159] Clottey, M. (2019). Population dynamics and reproductive studies of three commercially important sparid species from Ghanaian waters. PhD dissertation. UCC, Cape Coast.

[160] Ameworwor, M. Y. (in prep). Observations on the bottom-set gillnet fishery and the biology of selected species at three locations off the Central Region coast of Ghana. Ph.D. dissertation. UCC, Cape Coast.

[161] Amador, E. (in prep). Stock assessment and some aspects of reproduction of two fish species in Ghanaian waters. Master's Thesis. UCC, Cape Coast.

[162] Okpei, P. (2018). Towards sustainable exploitation of penaeid shrimps in the Ghanaian Gulf: A review of the status of the fishery. Master's Thesis. UCC, Cape Coast.

[163] Ofosu, E. S. (2018). The Catch per unit effort (CPUE) and length-weight relationship of Nile tilapia (*Oreochromis niloticus*) in the Kakum Lake, Brimsu. B.Sc. dissertation. UCC, Cape Coast.

[164] Mr. Joseph S. Debrah is a Senior Lecturer at DFAS, UCC.

- Nana Manso Frempong[165] investigated the growth and mortality parameters of flat sardinella (*Sardinella maderensis)* landed by beach seines at Sakumono beach and their implications for management under the supervision of Prof. Patrick K. Ofori-Danson (UG). Nana produced a B.Sc. dissertation and submitted it to the Department of Marine and Fisheries Sciences (DMFS), UG in June 2019.
- Myra Wewoli Wonje[166] studied the gear diversity and selectivity in the artisanal fishery at Tema Fishing Harbor from January to March, 2019. She worked under the supervision of Dr. Angela Lamptey (UG) to produce a B.Sc. dissertation.

2.4. KEY FINDINGS AND QUALITY OF THE BASELINE STUDY AND FOLLOW-UP STUDIES

2.4.1. Consultant's Reports: The findings of the consultant's research, which focused on some selected commercially important demersal fish species in the families Carangidae, Sparidae, Sepiidae, and Penaeidae, showed that:

- Most of these demersal fish stocks had modal body sizes below the minimum permissible landing sizes enshrined in the Fisheries Act of Ghana, 2002 (Act 625), which calls for stringent regulation of the mesh sizes deployed in the marine waters of Ghana;
- The biomass of the demersal fish stocks in the coastal waters of Ghana was declining due to increased fishing effort, supporting the need to institute closed season and create no-take zones in the coastal waters of Ghana;
- The MSY estimated for the artisanal, semi-industrial, and trawling fleets in Ghana is an indicator of unsustainable exploitation of the demersal fish stocks, which calls for the need to strengthen the application of the quota system to the marine fisheries of Ghana;
- The rate of exploitation of the marine fish stocks in Ghana is ecologically unhealthy because these stocks are being exploited unsustainably; and
- Most of these fish spawned from June to September, reinforcing the need to observe closed season within this period of time.

2.4.2. Graduate Students:

- The findings of the consultant's research were similar to those of Okpei (2018), Kassah (2019), Clottey (2019), Amador (2020), and Ameworwor (in prep) who worked on different fish stocks.
- Ofosu (2018) observed low yield of fish from the Brimsu reservoir in Ghana as a result of increased fishing effort.
- Wonje (2019) observed a variety of gears such as purse seine, beach seine, gill nets, traps, and hook and line in the Tema artisanal fishery, and each type of gear had a different selectivity.

2.5. HOW RESEARCH RESULTS WERE DISSEMINATED

The findings of the research undertaken by the consultant can be accessed via ghanalinks.org[167] (USAID portal) and FishCoMGhana.[168] Out of the students' work, some poster sessions were done: one poster (Paulina Okpei's work) in the 2017 Conference[169] and one poster (Michelle Clottey's work) in the 2019

[165] Frempong, N. M. (2019). Growth and mortality parameters of *Sardinella maderensis* (Lowe, 1838) landed by beach seines at Sakumono beach and their implications for management. B.Sc. dissertation. UG, Legon. 57 pp.
[166] Wonje, M. W. (2019). Gear diversity and selectivity in the artisanal fishery at the Tema Fishing Harbor. B.Sc. dissertation. UG, Legon. 35 pp.
[167] https://ghanalinks.org/web/ucc-fisheries-capacity-building-and-coastal-management/annual-quarterly-reports
[168] FishCoMGhana (https://fishcomghana.com.) is a database for fisheries and coastal governance created by DFAS under the USAID/Ghana UCC FCMCBSP.
[169] DFAS (2017d). Book of Abstracts; Conference on Fisheries and Coastal Environment (25 – 27 September, 2017). The changing marine fisheries and coasts: challenges and opportunities for changing minds. UCC, Cape Coast. 79pp

Conference.[170] Two students (Miriam Yayra Ameworwor and Jemimah Etornam Kassah) separately presented an aspect of their work at the 2019 Conference. Given the importance of these data, publication of the results in refereed journals is encouraged.

2.6. EARLY EVIDENCE OF POLICY IMPACT

The studies have contributed important scientific information to existing knowledge on the biology and population dynamics of some commercially important fish stocks in the marine waters of Ghana. These studies have also strengthened the need to implement closed fishing season regularly in the marine waters of Ghana to reverse the declining trend of fish landings.

3.0. REVIEW OF ACTIVITY 2.1.2. CONDUCTING RESEARCH AND ASSESSMENT ON MARINE FISHERIES GOVERNANCE ISSUES

3.1. BACKGROUND AND ORGANIZATION OF THE STUDY

Studies in this area involved a survey of various social issues in fishing communities as well as existing adaptive management strategies. It included participatory characterization of coastal communities and environments, studies on gender, child labor, and tourism in the Western and Central Regions. The studies also looked at the opportunities involved in adopting co-management strategies for managing fish stocks fisheries communities.

3.2. OBJECTIVES AND METHODOLOGY OF THE BASELINE STUDY

The overarching goal of the study was to contribute requisite data for improving the understanding of the roles and responsibilities of all fisheries-stakeholders in the fishing industry of Ghana and identify the constraints and opportunities at the district and community levels in the governance and management of fisheries systems of Ghana. The specific objectives of the study were to:

- Investigate various traditional governance structures or customary social arrangements, local governance and decentralization, collaborative, community, and any available community rights-based management and their legal dimensions;
- Identify various social issues, particularly the role of women;
- Identify and evaluate various management strategies; and
- Introduce, monitor, and evaluate co-management strategies in selected fishing communities.

In achieving these objectives, the lead consultant used mixed methods such as one-on-one interaction, focus group discussions, and direct participant observations to gather data. The baseline study[171] on

[170] DFAS (2019b). Book of Abstracts; 2ND Conference on Fisheries and Coastal Environment (19 – 21 August, 2019). Fisheries and Coastal Governance in Contemporary. UCC, Cape Coast. 75pp
[171] DFAS. (2016b). The USAID/Ghana UCC Fisheries and Coastal Management Capacity Building Support Project: Study

marine fisheries governance issues was conducted over a period of three months (February to April 2016) by Dr. George Darpaah at a cost of $35,714.28. Originally, the study sought to cover 60 of 189 landing beaches in seven districts in Western and Central Regions. However, 50 landing beaches in five districts of the two regions were covered in the baseline study and the rest were covered in the follow-up study.

3.3. OBJECTIVE, ORGANIZATION AND METHODOLOGY OF THE FOLLOW-UP STUDIES

3.3.1. Consultants: In 2017-2018, Dr. Benjamin Campion of Kwame Nkrumah University of Science and Technology (KNUST)[172] and Dr. George Darpaah,[173] the lead consultant on the baseline study of UG, undertook a follow-up study by working in ten landing beaches in two districts in the two regions not covered in the baseline study at a cost of $98,521.78. The same objectives for the baseline study were considered in the follow-up study (DFAS, 2019). In addition to the methods for the baseline study, an Unmanned Aerial Vehicle (UAV) was flown over each study area complemented by ground-truthing to estimate the length of the shoreline and document important landmarks. The final report was prepared and submitted to DFAS in January 2019.[174]

3.3.2. Students: The two students who worked on this project were supervised by experienced faculty members to ensure they did quality research and produced quality results.

3.3.2.1. Graduates: Postgraduate student Justina Annan conducted a similar study—using the same objectives and methods as the baseline study[175]—in April 2018 that focused on some fishing communities not captured in the studies undertaken by Dr. Darpaah and Dr. Campion. She subsequently produced a thesis under the supervision of Prof. Denis Aheto and Prof. Edward A. Obodai and submitted it to DFAS in 2019.

3.3.2.2. Undergraduates: Perpetual Adonu, an undergraduate student at the Department of Fisheries and Aquatic Resource Management (DFARM), University of Development Studies (UDS) in Tamale,[176] examined the role of women in fish processing in James Town, Greater Accra Region over a three-month period from February to April 2018. Perpetual produced a B.Sc. dissertation under the supervision of Mrs. Sandra A. Atindana (DFARM, UDS) and submitted it to DFARM in June 2018.

3.4. KEY FINDINGS OF THE BASELINE STUDY AND FOLLOW-UP STUDIES

The consultants' and students' studies highlight the respective roles of the stakeholders in the fishing industry. This information is an important prerequisite to the design of government policies to sustainably manage fish stocks with consequent improvement of the livelihoods of the fisherfolk.

Report on Research and Assessment on Marine Fisheries Governance Issues. Cape Coast: UCC. (unpublished manuscript). https://ghanalinks.org/web/ucc-fisheries-capacity-building-and-coastal-management/annual-quarterly-reports

[172] Dr Benjamin Betey Campion is a Senior Lecturer at DFWM, KNUST.

[173] Dr. George Darpaah, Senior Lecturer at DMFS, UG.

[174] DFAS. (2019). Sustained Research in Governance Issues on Marine and Coastal Management in Ghana. Cape Coast: UCC for the USAID/Ghana UCC FCMCBSP. https://fishcomghana.com

[175] Justina Annan did an independent study under the supervision of Prof. Denis Aheto and Prof. Edward Obodai.

[176] Adonu, P. (2018). The role of women in fish processing in James Town, Greater Accra Region. B.Sc. dissertation. UDS, Tamale.

3.4.1. The Consultants' Reports: The two consultants reports revealed ten important findings based on their research in two regions in Ghana:

- The fishing industry in the Central Region is generally dominated by the youth;
- Supplementary livelihoods are generally lacking in the various fishing communities;
- Traditional fisheries governance is closely linked with the behavior of the various ethnic groups along the coast of Ghana;
- The power of a chief fishermen is gradually eroding, and fisherfolk are willing to support the Government of Ghana (GoG) to restore the power of chief fishermen to help bring positive changes to the fisheries governance in Ghana;
- The issues of infractions on the traditional authority are perceived as outstanding contributory factors to the poor performance of the Ghanaian marine fisheries;
- Results from the coastline surveys of the study areas showed few communities had sea defense structures;
- Social amenities and services such as places of convenience, portable water, good roads, among others are either lacking or generally in various degrees of disrepair;
- The ramshackle nature of buildings near beaches, the structure of seascape, and immediate coastal landscapes suggest the coastal areas of Ghana are under severe stresses of both natural and anthropogenic origins;
- Certain by-laws set by the traditional authority (*e.g.,* no fishing on Tuesdays, no fishing expeditions on the death of anyone in the community, no unregistered canoe is allowed to use the landing beaches, no applications of illegal, unreported, and unregulated [IUU] fishing practices) were found to be effective in fishing communities governed by chief fishermen; and
- The majority of the fisherfolk agreed the closed season can be a good management action/strategy to properly manage the fish stocks of Ghana only when the illegal fishing practices such as light fishing, "*saiko* business," among others are discontinued.

3.4.2. The Students: Annan (2019) and Adonu (2018) revealed that women in the fisheries sector at James Town in Ghana are involved in different activities, including fish processing, mongering, and trading, but the majority of these women are fish processors who prefer fish smoking to any other fishing processing methods.

3.5. HOW RESEARCH RESULTS WERE DISSEMINATED

To date, there has been one poster session on the data at the 2017[177] Conference by the consultants and one poster session on the data at the 2019[178] Conference by Justina Annan. The results of the work by the consultants can be accessed via FishCoMGhana[179] and ghanalinks.org.[180] Also, one regional and 23 community debriefings were done through workshops in the Central and Western Regions of Ghana to validate the findings of the consultants' studies. Considering the importance and relevance of these data, publication of the results in peer-reviewed journals is encouraged.

3.6. EARLY EVIDENCE OF POLICY IMPACT

[177] DFAS (2017d). Book of Abstracts; Conference on Fisheries and Coastal Environment (25 – 27 September, 2017). The changing marine fisheries and coasts: challenges and opportunities for changing minds. UCC, Cape Coast. 79pp
[178] DFAS (2019b). Book of Abstracts; 2ND Conference on Fisheries and Coastal Environment (19 – 21 August, 2019). Fisheries and Coastal Governance in Contemporary. UCC, Cape Coast. 75pp
[179] (FishCoMGhana; *http://www.fishcomghana.com*)
[180] https://ghanalinks.org/web/ucc-fisheries-capacity-building-and-coastal-management/annual-quarterly-reports

The findings have contributed to the need to strengthen fisheries management outcomes and place a moratorium on fishing activities in Ghana's marine waters in a certain part of the year to facilitate recovery of the marine fisheries of Ghana.

4.0. REVIEW OF ACTIVITY 2.1.3. RESEARCH ON FISH AND SHELLFISH OF COMMERCIAL VALUE

4.1. BACKGROUND AND ORGANIZATION OF THE STUDY

These studies were conducted to examine the biology and ecology of some potentially culturable fish species such as black-chinned tilapia, shrimp, and oysters among others, with the primary aim of contributing scientific data for promoting the aquaculture industry in Ghana. The principal focus of the studies was the growth and survival of juvenile fish in captivity. These studies were undertaken by both undergraduate and postgraduate students under the direction of Professor Kobina Yankson, a full professor in DFAS at UCC.

4.2. OBJECTIVES AND METHODOLOGY OF THE BASELINE AND FOLLOW-UP STUDIES

4.2.1. Tilapia Production:

- One of the key studies under this activity evaluated the growth performance, survival rate, feed conversion ratio, heterosis, heritability, response to selection, and breeding values of four populations of black chinned tilapia *(Sarotherodon melanotheron)* from Brimsu reservoir, Baifikrom Reservoir, Weija Reservoir, and the Fosu Lagoon. This study was undertaken by Lawrence Ahiah[181] and supervised by Prof. Kobina Yankson and Prof. John Blay, all of DFAS. He produced a Ph.D. dissertation and submitted it to DFAS.
- Prince Dela Tseku[182] examined the performance of the black chinned tilapia (*S. melanotheron)* fed with different formulated feeds in a reservoir from November 2015 to November 2016 for his M.Phil. thesis, submitted to DFAS under the supervision of Prof. Kobina Yankson and Dr. Emmanuel Acheampong.
- Mercy Johnson-Ashun[183] assessed the effects of ginger and garlic supplements on culture performance of blackchin tilapia to find out if these supplements would improve the growth of the fish in captivity. Her work was supervised by Professor Kobina Yankson and Dr. Emmanuel Acheampong of DFAS and submitted in January 2019 for a M.Phil. degree in Aquaculture.

[181] Ahiah, L. (2019). Crossbreeding of four populations of black-chinned tilapia (*Sarotherodon melanotheron*) from Ghana. Ph.D. dissertation. UCC, Cape Coast.
[182] Tseku, P. D. (2016). Performance of the black chinned tilapia, *Sarotherodon melanotheron* fed different formulated feeds in a reservoir. Cape Coast: UCC DFAS. Master's thesis. UCC, Cape Coast.
[183] Johnson-Ashun, M. (2018). Effects of ginger and garlic supplements on culture performance of blackchin tilapia (*Sarotherodon melanotheron*). Master's thesis. UCC, Cape Coast. 168 pp

- Kezia Baidoo[184] investigated the fish species whose juveniles mostly utilize some two brackish water systems near Cape Coast (Ghana) from November 2016 to April 2017 for a M.Phil. degree in Fisheries Science. Her work was supervised by Prof. John Blay and Dr. Noble Kwame Asare and submitted in November 2018.
- William Dogah[185] examined some aspects of the biology of catfishes (*Clarias gariepinus* and *Heterobranchus longifilis)* from River Offin toward their culture development in Ghana from September 2017 to August 2018 for a M.Phil. degree in Aquaculture. The work was supervised by Prof. Edward Obodai and Dr. George Darpaah.
- Odoom Francis Bismark[186] assessed some aspects of the biology and ecology of blackchin tilapia in Benya, Brenu, and Fosu lagoons from January to April, 2019; this work was supervised by Prof. Joseph Aggrey-Fynn and submitted in June 2019 to DFAS as a B.Sc. dissertation.
- Daniel Onwonah-Owiredu[187] investigated the Nile tilapia (*Oreochromis niloticus*) mortalities associated with stocking densities in cages on the Lake Volta in Ghana under the supervision of Professor Nelson Winston Agbo at KNUST. He produced a B.Sc. dissertation and submitted it in June 2019 to the Department of Fisheries and Watershed Management (DFWM), KNUST.
- Richard Appiah-Kubi[188] examined the response of two tilapia strains to high temperature and low dissolved oxygen stress. His work was supervised by Dr. Daniel Agyei Boateng and submitted in May 2019 to the DFWM, KNUST for a B.Sc. degree in Fisheries and Water Management.
- Freda Sarfo[189] assessed the economic impact of replacing fish oil with palm kernel oil in the diet of Nile tilapia (*O. niloticus*) from February to April 2019 under the supervision of Dr. Christian Larbi Ayisi. She produced a B.Sc. dissertation and submitted it to DFARM, UDS.
- Gertrude Dzifa Mensah[190] assessed the economic impact of replacing fish meal with shea nut meal in the diet of Nile tilapia (*O. niloticus*) from February to April 2019 under the supervision of Dr. Christian Larbi Ayisi.
- Kwabena Anane[191] investigated the use of different doses of normal saline-diluted ovaprim to induce breeding in catfish (*Clarias gariepinus*). His work was supervised by Dr. Akwasi Ampofo-Yeboah. Kwabena produced a B.Sc. dissertation and submitted it DFARM, UDS in June 2019.

4.2.2. Oyster Production:

- Bright Asare[192] examined the culture potential of the West African mangrove oyster (*Crassostrea tulipa*) in the Nakwa Lagoon of Ghana from October 2015 to June 2016. During this study, oysters were cultured in the wild on coconut shells and their growth and survival rates were

[184] Baidoo, K. (2018). Utilization of two brackish water systems near Cape Coast (Ghana) as nurseries for Juvenile marine fishes. Master's thesis. UCC, Cape Coast. 117 pp
[185] Dogah, W. (2019). Studies on aspects of the biology of *Clarias gariepinus* and *Heterobranchus longifilis* from river Offin; towards their culture development in Ghana. Master's thesis. UCC, Cape Coast. 117 pp.
[186] Odoom F. B. (2019). Assessment of some aspects of the biology and ecology of blackchin tilapia in Benya, Brenu and Fosu lagoons. B.Sc. dissertation. UCC, Cape Coast.
[187] Onwonah-Owiredu, D. (2019). Investigating Nile tilapia (*Oreochromis niloticus*) mortalities in cages on the Lake Volta in Ghana. B.Sc. dissertation. KNUST, Kumasi. 67pp.
[188] Appiah-Kubi, R. (2019). Response of two tilapia strains to high temperature and low dissolved oxygen stress. BSc dissertation. KNUST, Kumasi. 47 pp.
[189] Sarfo, F. (2019). Replacement of fish oil with palm kernel oil on growth, feed utilization, proximate composition and economic analysis of Nile tilapia (*Oreochromis niloticus*). B.Sc. dissertation. UDS, Temale. 60 pp.
[190] Mensah, G. D. (2019). Substitution of fish meal with shea nut meal in diets of Nile tilapia fry on growth, feed utilization and economic analysis. B.Sc. dissertation. UDS, Tamale. 54pp.
[191] Anane, K. (2019). Evaluation of induced breeding of catfish (*Clarias gariepinus*), using different doses of normal saline diluted ovaprim. B.Sc. dissertation. UDS, Tamale. 33pp
[192] Asare, B. (2016). Aquaculture potential of the West African mangrove oyster (*Crassostrea tulipa*): a case study of the species in the Nakwa Lagoon of Ghana. Master's thesis. UCC, Cape Coast

regularly determined. The research was supervised by Prof. Edward Obodai and Dr. Emmanuel Acheampong, and a M.Phil. thesis was produced and submitted in September 2017 to DFAS.

- Grace Nikoi-Olai[193] also studied some aspects of the reproductive biology of the West African mangrove oyster (*C. tulipa*) in Amisa and Benya lagoons of Ghana from August 2018 to May 2019. She used histological procedures to study the breeding status of the oysters, and her work was supervised by Prof. Kobina Yankson and Prof. Edward Obodai. She has submitted her M.Phil. thesis to DFAS.
- Ernest Chuku[194] studied strategies for optimizing spat collection and growth of the oyster for its mass production in the coastal water bodies of Ghana. The study was conducted from August 2017 to October 2018 and supervised by Prof. Kobina Yankson and Prof. Edward Obodai. He produced a M.Phil. thesis and submitted it to DFAS.
- Isaac Osei[195] examined some aspects of the biology and culture potential of the West African mangrove oyster (*C. tulipa)* in the Densu Delta, Ghana from May 2017 to October 2018; he produced a Ph.D. dissertation and submitted it in January 2020 to DFAS.

4.2.3. Clam Production: Adwoa Twumwaah Gyapon[196] assessed the effect of Volta clam (*Galatea paradoxa*) on water quality and fish growth in earthen ponds. This work was supervised by Dr. Regina Edziyie and submitted in May 2019 as a B.Sc. dissertation to the DFWM, KNUST.

4.3. KEY FINDINGS AND QUALITY OF THE BASELINE STUDY AND FOLLOW-UP STUDIES

The findings provide important scientific information for promoting the culture of black-chinned tilapia, oysters, and clams in Ghana.

4.3.1. Tilapia and Catfish:

- The key findings of Ahiah (2019) include: (1) five hybrids[7] were significantly heavier in body weight of harvested fish compared to their parental stocks; (2) many hybrids exhibited heterosis and had moderate to high heritability; and (3) among the hybrids studied, female Weija × male Brimsu were the most suitable hybrids for culture in both fresh and brackish water.
- Tseku (2016) revealed that feed composed of equal proportions of fishmeal and soya bean cake is ideal for feeding fish in captivity.
- The study of Onwonah-Owiredu (2019) revealed a mortality rate of 48 percent in fish cages on River Volta in 2018 as a result of overstocking and poor water quality.
- The work of Appiah-Kubi (2019) indicated the "Foreign" strain under culture show lower resistance under high temperature and low dissolved oxygen levels in Ghana.
- Sarfo (2019) showed that palm kernel oil is a cheaper source of lipid for Nile tilapia.
- Anane (2019) showed that ovaprim with 50 percent normal saline induce the catfish *(C. gariepinus)* to breed, and the eggs they spawn have high hatching rate whilst the fry have high survival rate.
- Dzifa (2019) also showed that shea nut meal is a cheaper source of lipid for Nile tilapia.

[193] Nikoi-Olai, G. (2019). Some aspects of the reproductive biology of the West African mangrove oyster (*Crassostrea tulipa*) in Amisa and Benya lagoons of Ghana. Master's thesis. UCC, Cape Coast.
[194] Chuku, E. (2019). Strategies for optimizing spat collection and growth of the oyster for its mass production in the coastal water bodies of Ghana. Master's thesis. UCC, Cape Coast.
[195] Osei, I.K. (2019). Some aspects of the biology and culture potential of the West African mangrove oyster, *Crassostrea tulipa* in the Densu Delta, Ghana. Ph.D. dissertation. UCC, Cape Coast.
[196] Gyapon, A.T. (2019). The effect of Volta clam (*Galatea paradoxa*) on water quality and fish growth in earthen ponds. B.Sc. dissertation. KNUST, Kumasi. 74 pp.

4.3.2. Oyster Production: The findings of Chuku (2019) provide critical baseline information on the suitability of different substrates such as ceramic tiles, PVC, and recycled oyster shells for culturing the West African mangrove oyster on a large scale in Ghana. The key findings were: (1) ceramic tiles, PVC and recycled oyster shells were more suitable in collecting the spat of the shellfish than coconut shell; (2) spat of West African mangrove oysters settled profusely on the undersides of horizontally placed collectors; (3) spatfall, spat sizes, and growth of the oyster were significantly greater when cultured on middle and bottom collectors than on top collectors; (4) dissolved oxygen (DO) and salinity were the significant predictors of spatfall, whereas those for growth were DO and turbidity; and (5) *Fistubalanus pallidus* and *Ficopomatus* spp. were the most deleterious fouling organisms associated with the spat collection and culture.

4.3.3. Clam Production: Gyapon (2019) showed clams can be used to improve water quality in aquaculture ponds to enhance survival and growth of fish in captivity.

4.4. HOW RESEARCH RESULTS WERE DISSEMINATED

The results of these studies were discussed at the two Conferences on Fisheries and Coastal Environment in 2017 and 2019. To date, there appear to have been: (1) one conference presentation on one funded study at the 2017 Conference and one at the 2019 Conference; and (2) one poster session on the data at the 2017 Conference and two poster sessions at the 2019 Conference. Given the critical importance of these studies, FCMCBSP is encouraging the supervising professors to co-publish articles on these studies with their students.

4.5. EARLY EVIDENCE OF POLICY IMPACT

The results of these studies provide vital scientific information on how the West African mangrove oyster and blackchin tilapia can be cultured on a large scale to enhance the aquaculture industry in Ghana. The findings have significant potential impacts on supplementary livelihoods in fishing communities, especially during lean or closed fishing seasons.

5.0. REVIEW OF ACTIVITY 2.1.4. ANALYSIS OF VALUE CHAINS OF FISH TRADE

5.1. BACKGROUND AND ORGANIZATION OF THE STUDY

The studies under this activity focused on investigating: (1) the different phases of production, processing, and marketing of the different commercial fish species in the country; (2) the factors affecting the various stages in the value chain; and (3) the contribution of fish in the diet of various local populations. These studies were conducted by one UCC postgraduate student (Lesly Ntim) and some undergraduate students from UG, KNUST, and University of Energy and Natural Resources (UENR).

5.2. OBJECTIVES AND METHODOLOGY OF THE BASELINE AND FOLLOW-UP STUDIES

5.2.1. Graduate Students: UCC Ph.D. student Lesly Ntim197 analysed the value chain of the croakers (*Pseudotolithus senegalensis* and *Pseudotolithus typus*) in the Ghanaian Fishery from January 2017 to August 2018. The main objective of the work was to determine the value chain of the croaker fishery in the Central and Western Regions of Ghana due to the high economic value of croakers across the coast of West African waters. Data for the study were collected from both primary and secondary sources. A structured questionnaire and key informant interviews were employed to gather the primary data. Prices of the fish were determined using standard economic valuation methods. Under the supervision of Prof. Denis W. Aheto and Prof. John Blay. Lesly has produced a draft Ph.D. dissertation that is scheduled for completion in the next six months.

5.2.2. Undergraduate Students:

- Undergraduate students Daniel Assan[198] and Sualisu Abdul Mumin[199] (UDS), assessed the post-harvest loss of fish transported from fish landing sites to other areas in Ghana for processing. These students produced B.Sc. dissertations under the supervision of Dr. Daniel N. Akongyuure (DFARM, UDS) and submitted them in June 2018 to DFARM, UDS.
- Abu Wildan Osman[200] examined the factors responsible for fish spoilage at the market and processing centers of Albert Bosomtwi-Sam Fishing Harbour, Secondi in the Western Region. He worked under Dr. Daniel N. Akongyuure (DFARM, UDS) to produce a B.Sc. dissertation, which was submitted in June 2018 to DFARM, UDS.
- Nicholas Darku[201] examined the effects of ginger and garlic pastes as household preservatives for fresh *Clarias gariepinus* from January to May 2019 under the supervision of Dr. Daniel Nsoh Akongyuure (DFARM, UDS). He produced a B.Sc. dissertation and submitted it in June 2019 to DFARM, UDS.
- Danquah Isaac[202] assessed the marketing challenges among traders of tilapia in Kumasi Metropolis in the Ashanti Region of Ghana to determine the key constraints affecting tilapia traders in Kumasi. The research was supervised by Dr. Akwasi Ampofo-Yeboah (DFARM, UDS). He produced a B.Sc. dissertation and submitted it to DFARM, UDS in June 2019.
- Yusif Ansau[203] assessed the microbial load on seabream from two local markets in the Kumasi Metropolis, Ghana from February to April 2017. He worked under Dr. Akwasi Ampofo-Yeboah (DFARM) to produce a B.Sc. dissertation and submitted it in June 2017.
- Sumaiya Yakutu[204] investigated the microbial load in some selected smoked fish species in Yapei Market in the Northern Region of Ghana from February–April 2017 under the supervision of Dr. Akwasi Ampofo-Yeboah (DFARM, UDS). Sumaiya produced a B.Sc. dissertation and submitted it to DFARM in June 2017.

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[197] Ntim, L. (in prep). Value chain analysis of the croakers (*Pseudotolithus senegalensis* and *Pseudotolithus typus*) in the Ghanaian Fishery. Ph.D. dissertation. UCC, Cape Coast.
[198] Assan, D. (2018). Post-harvest fish loss at the landing site and during transportation at Tema Fishing Harbour. B.Sc. dissertation. UDS, Tamale. 34pp.
[199] Mumin, S. A. (2018). Assessment of post-harvest fish losses during marketing: a case study at the Ashaiman Market. B.Sc. dissertation. UDS, Tamale. 43pp.
[200] Osman, A. W. (2018). Factors responsible for fish spoilage at the market and processing centers of Albert Bosomtwi-Sam Fishing Harbour, Secondi in the Western Region. B.Sc. dissertation. UDS, Tamale. 46pp.
[201] Darku, N. (2019). Effects of ginger and garlic pastes as household preservatives for fresh *Clarias gariepinus* (Burchell, 1822). B.Sc. dissertation. UDS, Tamale. 51pp.
[202] Danquah, I. (2019). Marketing challenges among traders of tilapia in Kumasi metropolis in the Ashanti Region of Ghana. B.Sc. dissertation. UDS, Tamale. 61pp.
[203] Ansau, Y. (2017). Microbial quality on seabream from two local markets in the Kumasi Metropolis, Ghana. B.Sc. dissertation. UDS, Tamale. 47pp.
[204] Yakutu, S. (2019). Microbial load analysis in some selected smoked fish species in Yapei Market in the Northern Region, Ghana. B.Sc. dissertation. UDS, Tamale. 56pp.

- Benjamin Kettey-Tagoe[205] studied the chemical composition of processed and fresh skipjack tuna (*Katsuwonus pelamis*) and also conducted a sensory analysis on the fish in Tema, Greater Accra Region from February to April, 2017. He produced a B.Sc. dissertation under the supervision of Dr. Elliot H. Alhassan (DFARM, UDS) and submitted the work to DFARM in June 2017.

5.3. KEY FINDINGS AND QUALITY OF THE BASELINE STUDY AND FOLLOW-UP STUDIES

5.3.1. Croaker Fish Value Chain: The findings of Lesly Ntim capture the main players and their key roles in the croaker fishery industry of Ghana. The study describes the most popular methods for processing the fish and factors influencing their sale. These findings are relevant for making critical management decisions for the croaker fishery in Ghana. The principal findings were:

- The croaker value chain was supported by partners such as credit givers, non-governmental organizations (NGOs), policy makers and extension agencies, but weak relationships existed among the various partners and main actors in the croaker fishery system;
- The processing methods of croakers included smoking, salting, frying, and filleting;
- Filleted croakers had high profit margins;
- Factors such as operational cost of fishing, type of fishing, and method of selling had influence on the sales of croakers; and
- Total monthly income was dependent on the quantity of croakers landed from fishing expeditions.

So far, none of these findings are on FishCoMGhana.

5.3.2. Fish Transport and Conservation:

- Assan (2018)[206] and Mumin (2018)[207] revealed massive fish spoilage accounts for great fish losses in the transportation of fish from fish landing sites to other areas as a result of mishandling.
- Osman (2018)[208] identified insufficient ice for fish preservation and exposure of fish to high heat during smoking as the major causes of fish spoilage in Ghana.
- Darku (2019)[209] found garlic and ginger pastes can preserve fish for three days. Danquah (2019) found the challenges affecting tilapia traders in Kumasi as high perishability of the product, inadequate storage facilities, instability of prices, inadequate power supply, poor transportation network, and inadequate capital.
- Ansau (2017)[210] observed high fecal coliform in seabream on sale at two local markets in Kumasi as a result of poor sanitary conditions.
- Kettey-Tagoe (2017)[211] showed heavily dried smoked skipjack tuna has a good color, odor, flavor, texture, and is readily accepted by consumers in Ghana.

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[205] Kettey-Tagoe, B. (2017). Chemical composition and sensory analysis of processed and fresh skipjack tuna (*Katsuwonus pelamis*) in Tema, Greater Accra Region. B.Sc. dissertation. UDS, Temale. 47pp.
[206] Assan, D. (2018). Post-harvest fish loss at the landing site and during transportation at Tema Fishing Harbour. B.Sc. dissertation. UDS, Tamale. 34pp.
[207] Mumin, S. A. (2018). Assessment of post-harvest fish losses during marketing: a case study at the Ashaiman Market. B.Sc. dissertation. UDS, Tamale. 43pp.
[208] Osman, A. W. (2018). Factors responsible for fish spoilage at the market and processing centers of Albert Bosomtwi-Sam Fishing Harbour, Secondi in the Western Region. B.Sc. dissertation. UDS, Tamale. 46pp.
[209] Darku, N. (2019). Effects of ginger and garlic pastes as household preservatives for fresh *Clarias gariepinus* (Burchell, 1822). B.Sc. dissertation. UDS, Tamale. 51pp.
[210] Ansau, Y. (2017). Microbial quality on seabream from two local markets in the Kumasi Metropolis, Ghana. B.Sc. dissertation. UDS, Tamale. 47pp.
[211] Kettey-Tagoe, B. (2017). Chemical composition and sensory analysis of processed and fresh skipjack tuna (*Katsuwonus pelamis*) in Tema, Greater Accra Region. B.Sc. dissertation. UDS, Temale. 47pp.

5.4. HOW RESEARCH RESULTS WERE DISSEMINATED

The results of these studies were discussed at the two Conferences on Fisheries and Coastal Environment in 2017 and 2019. To date, there have been: (1) two conference presentations on some of these funded studies at the 2017 Conference; and (2) one poster session at the 2019 Conference. Given the critical importance of these studies, FCMCBSP is encouraging the supervising professors to co-publish articles on these studies with their students.

5.5. EARLY EVIDENCE OF POLICY IMPACT

This series of studies has significant potential for supporting the management of highly valued demersal fish stocks such as the croakers in Ghana.

6.0. REVIEW OF ACTIVITY 2.1.5. MONITOR THE BIODIVERSITY AND HEALTH OF COASTAL ECOSYSTEMS

6.1. BACKGROUND AND ORGANIZATION OF THE STUDY

The researches under this activity involved periodic examination of biodiversity of fish, benthic invertebrate, and mangrove communities in lagoons and estuaries to gather baseline information for future monitoring in view of the ongoing offshore oil and gas exploration and production. Aquatic environmental factors, occurrence of algal blooms, and invasive species were also investigated. The consultants and students undertook a series of baseline and follow-up studies different water bodies in Ghana.

The study was led by three consultants: Dr. Daniel Adjei-Boateng, Dr. Regina Esi Edziyie, and Dr. Kwasi Obirikorang from KNUST.[212] Similar studies were independently undertaken by 17 postgraduate students from UCC and 36 undergraduate students from UCC, UG, KNUST, UDS, and UENR.

6.2. OBJECTIVES AND METHODOLOGY OF THE BASELINE AND FOLLOW-ON STUDIES

6.2.1. Consultants:

Baseline Study (January to April 2016): The baseline study[213] by the three consultants centered on the assessment of the biodiversity and health of closed lagoon (Awiane Anloanu) at Half Assini in the

[212] Dr. Adjei Boateng, Senior Lecturer, DFWM, KNUST, Kumasi, Ghana; Dr. Edziyie is a Senior Lecturer at DFWM, KNUST; Dr. Kwasi Obirikorang is a Senior Lecturer at DFWM, KNUST.
[213] DFAS. (2016c). *USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Wetlands ecological health monitoring in the Central and Western regions of Ghana.* Cape Coast: UCC.

Western Region of Ghana. The study sought to estimate the size of the lagoon and determine its health, taking into consideration the physical, chemical, and biological indicators. The lagoon size was estimated by walking its perimeter, taking Global Positioning System (GPS) coordinates, and plotting these points on a wet season satellite image to calculate the total lagoon surface area; monthly measurement of temperature, salinity, pH, total dissolved solids (TDS), conductivity, and DO of the lagoon were taken in-situ using a pre-calibrated Hanna (HI 9828) multi-parameter probe. The water depth of the lagoon was measured using a graduated pole, whereas transparency was measured using a Secchi disc (20 cm diameter). Nutrient concentrations (in mgL^{-1}) were determined using a photometer. The analyses of the water samples for phosphates and nitrates and alkalinity were carried out using photometric methods. Photographs of the macrophytes were taken to facilitate identification of aquatic plants fringing the lagoon. The granulometric analysis was performed on the sediment samples of the lagoon, whereas organic matter in the sediments was determined using the Loss on Ignition (LOI) method. Sediment samples were also collected from the lagoon and sieved on-site for macro-invertebrates. These macro-invertebrates were transferred into 250 ml plastic low-density polyethylene (LDPE) containers and preserved with 70 percent ethanol for identification using a compound low-power microscope in the laboratory. A comprehensive fishing study was carried out using seining and hook-and-line method to estimate the species' abundance in the lagoon. The study was conducted by the consultants over a four-month period from January to April 2016 at a cost of $11, 729.33.

6.2.2. Graduate Students:

- Rebecca Kyerewa Essamuah[214] worked toward developing a decision support system (DSS) for prioritizing conservation of coastal zone ecological spaces in urban areas of Ghana by using Fosu Lagoon as a case study. This work covered a period of 14 months (November 2016 to December 2017). She is in the process of completing her Ph.D. dissertation to be submitted to DFAS; her research was supervised by Prof. Denis W. Aheto (DFAS, UCC) and Dr. Emmanuel Acheampong (DFAS, UCC)
- Gertrude Lucky Aku Dali[215] assessed the health of the mangrove forests in Kakum and Pra Estuaries in Ghana from May to August 2018. She is preparing a Ph.D. dissertation to be submitted to DFAS for a Ph.D. degree in Integrated Coastal Zone Management. Her work was supervised by Prof. Denis W. Aheto (DFAS, UCC) and Prof. John Blay (DFAS, UCC).
- Alberta Jonah[216] assessed the coastal ecosystems in Cape Three Points toward its designation as Marine Protected Area in Ghana. Her research was undertaken from August 2017 to December 2019; and her supervisors were Prof. Denis W. Aheto (DFAS, UCC) and Dr. Isaac Okyere (DFAS, UCC). Her work was submitted to DFAS in January 2020.
- Elizabeth Effah[217] assessed the ecological and health implications of heavy metals and microbial load content of the Ankobra River on humans in Ghana. Elizabeth produced a Ph.D. dissertation and submitted it to DFAS in December 2019 under the supervision of Prof. Denis W. Aheto and Dr. Emmanuel Acheampong (DFAS, UCC). Her research covered a one-year period from September 2017 to August 2018.

[214] Essamuah, R. K. (in prep). Towards developing a decision support system (DSS) for prioritizing conservation of coastal zone ecological spaces in urban areas of Ghana: a case study of the Fosu lagoon. PhD dissertation. University of Cape Coast, Cape Coast. Ph.D. dissertation. UCC, Cape Coast.
[215] Dali, G. L. A. (in prep). Assessment of the Health of Mangrove Forests in the Kakum and Pra Estuaries in Ghana. Ph.D. dissertation. University of Cape Coast, Cape Coast. Ph.D. dissertation. UCC, Cape Coast.
[216] Jonah, A. (2020). Assessment of coastal ecosystems in the Greater Cape Three Points area towards its designation as Marine Protected area in Ghana. Ph.D. dissertation. UCC, Cape Coast.
[217] Effah, E. (2019). Assessment of the ecological and human health implications of heavy metals and microbial load content of the Ankobra River, Ghana. Ph.D. dissertation. UCC, Cape Coast.

- Rahmat Quaigrane Duker[218] investigated the distribution and eco-toxicological effects of PAHs in selected lagoons in Ghana from December 2017 to February 2019. She is still analyzing her data and hopes to produce a Ph.D. dissertation for submission by the end of March 2020. Her work is being supervised by Dr. Noble Asare (DFAS, UCC) and Prof Edward Obodai (DFAS, UCC).
- Margaret Fafa Dzakpasu[219] assessed the ecology of some coastal lagoons and estuaries in Ghana from June 2016 to August 2017 under the supervision of Prof. Kobina Yankson (UCC) and Dr. Emmanuel Lamptey (DMFS, UG). She produced a Ph.D. dissertation and submitted it to DFAS in December 2019.
- Delove Abraham Asiedu[220] studied the mesozooplankton abundance and impact of selected human-induced stressors on calanoid copepod in the marine coastal waters of Ghana from February to May 2019. His research was supervised by Dr. Noble Kwame Asare (DFAS, UCC) and Dr. Emmanuel Acheampong (DFAS, UCC), and he is presently writing his thesis for a M.Phil. degree in Oceanography and Limnology.
- Daniel Agyei[221] and Elsie Akushika[222] used satellite automatic identification system to monitor fishing activities of the artisanal tuna canoe fleet and map the potential fishing areas of the fleet in the coastal waters of Ghana from August 2015 to January 2016. Although they did the same study, they worked at different areas of the coastal waters of Ghana and produced separate theses and submitted them to DFAS.
- Bernard Assiam[223] used Remote Sensing Application (RSA) and other social methods to assess aspects of ecology of the Fosu Lagoon and its associated watershed in December 2018 for a M.Phil. degree in Integrated Coastal Zone Management. Bernard worked under the supervision of Prof. Aheto W. Aheto (DFAS, UCC) and Dr. Isaac Okyere (DFAS, UCC).[224] He is yet to submit his thesis to DFAS.
- Success Sowah[225] assessed the water quality of three coastal water bodies (Whin Estuary, Narkwa Lagoon, Densu Delta) from October 2017 to July 2018 toward oyster culture in Ghana. Success produced a M.Phil. thesis under the supervision of Prof. Kobina Yankson (DFAS, UCC) and Dr. Noble (DFAS, UCC) Asare and submitted it to DFAS.
- Gabriel Gator[226] studied the morphology and microstructure of otoliths of juvenile fish species from the coastal waters of Ghana to provide some descriptions of the gross morphology and incremental patterns of the otoliths. This study was conducted over a six-month period from October 2018 to March 2019. He produced a M.Phil. thesis under the supervision of Prof. John Blay (DFAS, UCC) and Prof. Kobina Yankson (DFAS, UCC) and submitted it to DFAS.

6.2.3. Undergraduates:

[218] Rahmat, R. Q. (in prep). Distribution and eco-toxicological effects of PAHs in selected lagoons in Ghana. Ph.D. dissertation. UCC, Cape Coast.
[219] Dzakpasu, M. F. (2019). Ecological assessment of some coastal lagoons and estuaries in Ghana: abiotic and biotic approaches. Ph.D. dissertation. University of Cape Coast, Cape Coast. Ph.D. dissertation. UCC, Cape Coast.
[220] Asiedu, D. A. (in prep). Mesozooplankton abundance and impact of selected human-induced stressors on calanoid copepod in the marine coastal waters of Ghana. Master's Thesis. UCC, Cape Coast.
[221] Agyei, D. (2017). Small scale tuna fisheries monitoring using satellite automatic identification system in the coastal waters of Ghana. Master's thesis. UCC, Cape Coast.
[222] Akushika, E. (2017). Small scale tuna fisheries monitoring using satellite automatic identification system in the coastal waters of Ghana. Master's thesis. UCC, Cape Coast.
[223] Assiam, B. (in prep). Ecological studies of the Fosu Lagoon using Remote Sensing Application. Master's Thesis. University of Cape Coast, Cape Coast. Master's Thesis. UCC, Cape Coast.
[224] DFAS, UCC, Cape Coast, Ghana.
[225] Sowah, S. (2019). Assessment of Water Quality of Three Coastal Water Bodies Towards the Culture of Oysters in Ghana. Master's thesis. University of Cape Coast, Cape Coast. Master's Thesis. UCC, Cape Coast.
[226] Gator, G. (2019). Morphology and microstructure of otoliths of juvenile fish species from the coastal waters of Ghana. Master's thesis. University of Cape Coast, Cape Coast. Master's thesis. UCC, Cape Coast.

- Priscilla Dzidzor Nego examined the environmental and socio-economic threats of salt production to fisheries in the Songhor Lagoon, Dangme East District over a four-month period from January to May 2019. This work was supervised by Dr. Elliot H. Alhassan (DFARM, UDS) and submitted to DFARM in June 2017.
- Francis Kofi Donkor[227] investigated ghost fishing of gillnets in the Black Volta near Buipe, Ghana from February to April 2017 under the supervision of Dr. Daniel Nsoh Akongyuure (DFARM). Francis produced a B.Sc. dissertation and submitted it to DFARM on June, 2017.
- Rakib Karim M. Abdul[228] investigated the composition and relative abundance of fish species in the White Volta River at Pwalugu in Ghana before the creation of the Pwalugu multipurpose dam. He worked over a period of six months (November 2017 to April 2018) under the supervision of Dr. Elliot H. Alhassan (DFARM, UDS) to produce a B.Sc. dissertation. His work was submitted to DFARM in June 2018.
- Zainab Mohammed Umar[229] assessed the heavy metals in European anchovy (*Engraulis encrosicolus)* and their potential health risks on humans in Ghana. He produced a B.Sc. dissertation under the supervision of Dr. Samuel Addo (DMFS, UG) and submitted it to DMFS, UG in June 2019.
- Kofi Oppong-Mensah[230] assessed the mercury bioaccumulation in the West African oyster (*C. tulipa)* in the Pra Estuary in April 2019 under the supervision of Dr. Benjamin Osei Botwe (DMFS, UG). Kofi produced B.Sc. dissertation and submitted it to DMFS, UG in June 2019.
- Fidelia Esenam Bandua[231] assessed the concentration of sediment-bound heavy metals in the Pra Estuary in April, 2019. Her work was supervised by Dr. Benjamin Osei Botwe (DMFS, UG) and it was submitted to DMFS, UG in June 2019.

6.3. KEY FINDINGS AND QUALITY OF THE BASELINE STUDY AND FOLLOW-UP STUDIES

These studies provide the baseline information that is needed in order to monitor the various ecosystems in the face of the ongoing and projected offshore oil and gas exploration and production in Ghana.

6.3.1. Consultant Studies: The consultants' reports revealed that:

- Awiane Lagoon has a total wetland area of 6.9 ha;
- The water quality variables of the lagoon indicate the lagoon is mildly eutrophic characterized by decreased transparency and proliferation of aquatic macrophytes; and
- The lagoon supports five fish species (four cichlids and one mullet)—Hemichromis fasciatus, Sarotherodon melanotheron, Sarotherodon galilaeus, and Tilapia zillii; and Mugil spp.

6.3.2. Graduate Students:

[227] Donkor, F. K. (2017). Analysis of ghost fishing of gillnets in Black Volta near Buipe, Ghana. B.Sc. dissertation. UDS, Tamale. 45pp.
[228] Abdul, R. K. M. (2018). Fish species composition and relative abundance at Pwalugu on the White Volta River before the Pwalugu multipurpose dam project. B.Sc. dissertation. UDS, Tamale. 45pp.
[229] Umar, Z. M. (2019). Assessment of heavy metals in *Engraulis encrasicolus* (Linnaeus, 1758) and their potential human health risks. B.Sc. dissertation. UG, Legon. 57 pp.
[230] Oppong-Mensah, K. (2019). Assessment of mercury bioaccumulation in the West African oyster *Crassostrea tulipa* inhabiting the Pra Estuary. B.Sc. dissertation. UG, Legon. 40 pp.
[231] Bandua, F. E. (2019). Assessment of the potential mobility of sediment-bound heavy metals in the Pra Estuary and its ecological implication. B.Sc. dissertation. UG, Legon. 30 pp.

- Essamuah (in prep)[232] showed the decision support system for Ghana's coastal zone management should be based on weights and ranks of productivity (fisheries), biodiversity, recreation and heritage site, or municipal-treated waste receptacle.
- Dali (in prep)[233] found low heavy metal contamination in Kakum and Pra Esturies, but the mangrove forests around these estuaries were being harvested unsustainably.
- Jonah (2020)[234] found ecosystems in Cape Three Points to be in good conditions for sustaining aquatic life, but the major anthropogenic pressures which threatened these ecosystems were open defecation, marine debris, waste disposal, and dynamite fishing.
- Effah (2019)[235] revealed consumption of As, Pb, N, Mn, Cd, and Cr in fish and water from the Ankobra River can pose carcinogenic risk to the human population since the levels are above the acceptable limits for consumption.
- Dzakpasu (2019)[236] revealed heavy metals are generally high in the Sakumo II and Fosu lagoons in Ghana, whereas species richness and diversity are generally low in these lagoons.
- Agyei (2017)[237] revealed the tuna fishery in Ghana is dominated by *Katsuwonus pelamis.*
- Asiedu (in prep)[238] identified four major orders of copepods in the coastal marine waters of Ghana: *Calanoida* (most abundant), *Cyclopoida*, *Poecilostomatoida*, and *Harpacticoida*; the abundance of these copepods increased with increasing phytoplankton concentrations.
- Assiam (in prep)[239] observed a reduction in the size of the Fosu Lagoon as a result of built-up activities.
- Sowah (2019)[240] found Whin Estuary, Narkwa Lagoon, and Densu Delta to be ecologically healthy for culturing oysters.
- Gator (2019)[241] observed different microstructural patterns of otolith among fish species in the coastal waters of Ghana.

6.3.3. Undergraduates:

- Nego (2019)[242] found water siphoning by salt miners, use of chemicals, increased salinity, increased siltation, and short-lived fishing season as threats to the fisheries in Songhor Lagoon.

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[232] Essamuah, R. K. (in prep). Towards developing a decision support system (DSS) for prioritizing conservation of coastal zone ecological spaces in urban areas of Ghana: a case study of the Fosu lagoon. PhD dissertation. University of Cape Coast, Cape Coast. Ph.D. dissertation. UCC, Cape Coast.

[233] Dali, G. L. A. (in prep). Assessment of the Health of Mangrove Forests in the Kakum and Pra Estuaries in Ghana. Ph.D. dissertation. University of Cape Coast, Cape Coast. Ph.D. dissertation. UCC, Cape Coast.

[234] Jonah, A. (2020). Assessment of coastal ecosystems in the Greater Cape Three Points area towards its designation as Marine Protected area in Ghana. Ph.D. dissertation. UCC, Cape Coast.

[235] Effah, E. (2019). Assessment of the ecological and human health implications of heavy metals and microbial load content of the Ankobra River, Ghana. Ph.D. dissertation. UCC, Cape Coast.

[236] Dzakpasu, M. F. (2019). Ecological assessment of some coastal lagoons and estuaries in Ghana: abiotic and biotic approaches. Ph.D. dissertation. University of Cape Coast, Cape Coast. Ph.D. dissertation. UCC, Cape Coast.

[237] Agyei, D. (2017). Small scale tuna fisheries monitoring using satellite automatic identification system in the coastal waters of Ghana. Master's thesis. UCC, Cape Coast.

[238] Asiedu, D. A. (in prep). Mesozooplankton abundance and impact of selected human-induced stressors on calanoid copepod in the marine coastal waters of Ghana. Master's Thesis. UCC, Cape Coast.

[239] Assiam, B. (in prep). Ecological studies of the Fosu Lagoon using Remote Sensing Application. Master's Thesis. University of Cape Coast, Cape Coast. Master's Thesis. UCC, Cape Coast.

[240] Sowah, S. (2019). Assessment of Water Quality of Three Coastal Water Bodies Towards the Culture of Oysters in Ghana. Master's thesis. University of Cape Coast, Cape Coast. Master's Thesis. UCC, Cape Coast.

[241] Gator, G. (2019). Morphology and microstructure of otoliths of juvenile fish species from the coastal waters of Ghana. Master's thesis. University of Cape Coast, Cape Coast. Master's thesis. UCC, Cape Coast.

[242] Nego, P. D. (2019). Environmental and socio-economic threats of salt production to fisheries in the Songhor Lagoon, Dangme East District: a case study at the Songhor Lagoon, Dangme East District. B.Sc. dissertation. UDS, Temale 52pp.

- Donkor (2017)[243] showed fish catch valued at $300 per abandoned net is lost to ghost fishing every three months in the Black Volta near Buipe in Ghana.
- Abdul (2018)[244] observed 22 fish species in ten families in the White Volta River at Pwalugu in Ghana.
- Umar (2019)[245] showed metal concentrations in the European anchovy landed in Ghana are within acceptable limits set by European Union (EU), Food and Agriculture Organization (FAO), and United States Environmental Protection Agency (US-EPA).
- Oppong-Mensah (2019)[246] showed that mercury levels in West African oyster in the Pra Estuary were below the acceptable limits set by US-EPA and World Health Organization (WHO).
- Bandua (2019)[247] revealed nickel (Ni) and lead (Pb) concentrations were high in the Pra River of Ghana.

6.4. HOW RESEARCH RESULTS WERE DISSEMINATED

These findings of the consultants are available online via ghanalinks.org.[248] To date, there have been: (1) three conference presentations on some of these funded studies at the 2017[249] Conference, and six at the 2019 Conference;[250] and (2) four poster sessions on the data at the 2017 Conference and four poster sessions at the 2019 Conference. Given the critical importance of these studies, FCMCBSP is encouraging the supervising professors to co-publish articles on these studies with their students. So far, two of the studies have been published on JFCom.[251]

6.5. EARLY EVIDENCE OF POLICY IMPACT

The study contributes critical data to support the call by the GoG to stop using coastal water bodies as refuse dumping sites and to create stringent by-laws for conservation of coastal water bodies.

[243] Donkor, F. K. (2017). Analysis of ghost fishing of gillnets in Black Volta near Buipe, Ghana. B.Sc. dissertation. UDS, Tamale. 45pp.
[244] Abdul, R. K. M. (2018). Fish species composition and relative abundance at Pwalugu on the White Volta River before the Pwalugu multipurpose dam project. B.Sc. dissertation. UDS, Tamale. 45pp.
[245] Umar, Z. M. (2019). Assessment of heavy metals in *Engraulis encrasicolus* (Linnaeus, 1758) and their potential human health risks. B.Sc. dissertation. UG, Legon. 57 pp.
[246] Oppong-Mensah, K. (2019). Assessment of mercury bioaccumulation in the West African oyster *Crassostrea tulipa* inhabiting the Pra Estuary. B.Sc. dissertation. UG, Legon. 40 pp.
[247] Bandua, F. E. (2019). Assessment of the potential mobility of sediment-bound heavy metals in the Pra Estuary and its ecological implication. B.Sc. dissertation. UG, Legon. 30 pp.
[248] https://ghanalinks.org/web/ucc-fisheries-capacity-building-and-coastal-management/annual-quarterly-reports
[249] DFAS (2017). Book of Abstracts; Conference on Fisheries and Coastal Environment (25 – 27 September, 2017). The changing marine fisheries and coasts: challenges and opportunities for changing minds. University of Cape Coast, Cape Coast. 79pp
[250] DFAS (2019). Book of Abstracts; 2ND Conference on Fisheries and Coastal Environment (19 – 21 August, 2019). Fisheries and Coastal Governance in Contemporary. University of Cape Coast, Cape Coast. 75pp
[251] JFCoM is an online journal created under FCMCBSP to publish scientific papers on aquaculture, fisheries, and coastal environmental issues in Africa. This is a link to the journal: http://www.jfcomonline.com

7.0. SWOT ANALYSIS OF THE APPROACHES ADOPTED FOR EXECUTING THE STUDIES UNDER FCMCBSP

7.1. STRENGTHS

- **Formal advertisement:** The research opportunities were advertised in some popular newspapers such as Daily Graphic and Ghanaian Times.
- **Competitive bid process:** Both consultants and postgraduate students were selected through formal interactions where the candidates were interviewed by a panel of DFAS faculty members. The successful candidates were selected to undertake the various studies.
- **Rigorous processes:** Terms and conditions for the various activities (2.1.1–2.1.5) in the workplan were set to guide the execution of the studies and the successful consultants were made to sign contracts after agreeing to undertake the studies.
- **Acceptable scientific methods:** Conventionally acceptable methods were used to conduct the various studies.
- **Good supervision:** The research activities of the consultants and students were supervised by renowned and experienced faculty members of DFAS. The dissertations and theses of the students were assessed by internal examiners from other departments (*e.g.,* Department of Entomology and Wildlife) within UCC and external examiners from other sister universities.

7.2. WEAKNESSES

- **Limited staff members:** DFAS had limited human capacity to enhance supervision of the various activities. As a result, the staff members were overburdened with many activities at a time.

7.3. OPPORTUNITIES

- **Funding opportunities:** The research activities were fully funded under FCMCBSP.
- **Production of quality findings:** More quality data and information on aquatic ecosystems and their health conditions, fisheries, fisheries governance, and fish value chain in Ghana have been produced.
- **High rate of Graduation:** Previously, only a few students at UCC graduated with Ph.D. and M.Phil. degrees in the areas of Aquaculture, Limnology and Oceanography, Fisheries Science, and Integrated Coastal Zone Management. But now more students are going to graduate with higher degrees in the said areas of study under FCMCBSP.

7.4. THREATS

- **Teaching responsibilities:** The lead staff members who oversaw the execution of the various activities had teaching responsibilities to handle at UCC. This might have compromised the supervisory roles of the lead persons.

8.0. SWOT ANALYSIS PERFORMED ON ACTIVITY 2.1.6: DEVELOPING MARINE AND COASTAL FISHERIES DATABASE

8.1. STRENGTHS

- **Rigorous processes:** Rigorous processes were followed to create the database (FishCoMGhana; *http://www.fishcomghana.com*), including organizing a workshop to discuss how the database could be created, selecting a computer programmer through advertisement, developing a work plan for the creation processes approved by DFAS project team management, domain registration with GoDaddy Inc., and hosting acquisition and server set up with a secure DNS and SSL certificate.
- **Formal advertisement:** The programmer of the database (FishCoMGhana) was selected after a public advertisement. The selection was based on the programmer's profound experience and expertise in Information Technology and database creation.
- **Rigorous consultation and collaboration:** The database was created and launched at a workshop organized at UG in Accra where all the collaborating partners[252] were present to sign Memorandum of Understanding (MOU) to agree on constant sharing of information for stocking the database. The MOU was approved by the UCC legal counsel.
- **Strong imitation:** The database was modeled after world data centers such as OBIS and PANGAEA, which are known to be robust, effective, and user friendly.
- **Quality and reliable:** The data and information on FishCoMGhana are quality and reliable for referencing, teaching and learning, and decision-making on fisheries and coastal management because every article is peer reviewed by experts prior to publication in the database.
- **Regular updates:** Well-educated researchers have been employed to update the database periodically with quality information on fisheries.
- **User-friendly:** Information can easily be accessed online by users from all the major browsers. A workshop was even organized for most potential users to learn how to easily and intuitively use the database. The database responds to queries through a search engine.
- **Time efficient:** Online platform provide a ready access to information.
- **Cost reduction:** Researchers can easily rely on the internet service of their institutions to access the information in the database at low cost.
- **Worldwide accessibility:** The database is meant to be accessed by a wide range of authenticated users, including researchers, students, and managers of aquatic environment and resources in Ghana and beyond. At the moment, online tracking indicates a lot of people from different countries (including US, Brazil, etc.) have visited the database.
- **Funded in advance:** The database has been funded to cover a period of five years into the future (2019–2024).

[252] Environmental Protection Agency, Ministry of Fisheries and Aquaculture Development, Fisheries Commission, UENR, UG, KNUST, UDS, CSIR, URI, USAID, and Civil Society Representatives.

- **Proper management:** A team of learned people including some staff member of DFAS has been formed to manage the day-to-day activities of the database. This team has been equipped with the needed skills to efficiently manage its key aspects.
- **Regular workshop:** Regular workshops are planned to assess the progress on the database's usage and sustenance. So far, one workshop has been organized to assess any progress made on the database after its creation and launch.

8.2. WEAKNESSES

- **Security problems:** The security of the database can be compromised by hackers because it is an online service.
- **Weak internet service:** Intermittent on-and-off internet service engendered by system failure in some institutions in Ghana might make the use of the database undesirable.
- **Limited to issues in Ghana:** The data and information on FishCoMGhana capture information on fisheries and coastal management in Ghana only.
- **Functionality limited to internet accessibility:** The data and information in the database cannot be accessed without internet service.
- **Data sharing is a challenge:** Unwillingness of certain partners to contribute data and information might compromise the sustenance of the database.
- **Accessibility is contribution dependent:** Institutions will have varying degrees of accessing the database depending on the extent of their data contributions.
- **High cost of creating and maintaining the platform:** An amount of $16,144.44 was spent to create the database and huge amount of money will be required to maintain it. As it stands, the maintenance of the database has been funded in advance at a cost of $14,038.32 to cover a period of five years (2019–2024).

8.3. OPPORTUNITIES

- **Boost education:** The database is a repository of information where users are provided with reference materials to support and boost teaching and learning as far as education on fisheries and coastal issues in Ghana are concerned.
- **Strengthen decision-making:** Volumes of fisheries data and information populated in the database will encourage and facilitate decision and policy-making on fisheries and coastal management in Ghana.
- **Research efficiency:** The database will boost fisheries research activities by providing references on documented fisheries issues in Ghana.
- **Funding opportunities:** Through proposal writing, donor agencies are likely to provide funding to sustain the database if they have interest in disseminating information on fisheries issues
- **Business avenue:** The database is likely to be run through subscription modality to generate funds for sustaining the service when the five-year funding is exhausted.
- **Institutional networking:** Institutional networking among universities, practitioners, and policy makers will be promoted.
- **Security and quality assurance of scientific data:** The database will promote the security and quality assurance of scientific data on fisheries governance issues in Ghana.

8.4. THREATS

- **Limited financing**: Limited finances to sustain the database might lead to its intermittent shutdown. It is therefore advisable to propose to the right funding agencies to source funds for sustaining the database.

- **Subscription:** The database will be operated through subscription approach to ensure sustenance, especially when the funded period elapses. It is therefore recommended measures should be put in place to give discounts to users who frequently contribute data and/or information to the database.
- **Limited usage due to high cost**: Users, especially students, are likely to get discouraged from using the database once the subscription system is instituted. To encourage database usage by students, provisions should be made to liaise with education institutions to cover the students in their subscriptions.
- **Vulnerability to hackers**: Hackers might take advantage of the database to invade the privacy of users online.
- **Lack of cooperation to share data**: Lack of cooperation among partners to share data for updating the platform might hinder the regular update of the database.
- **Unfavorable data use policies**: Unfavorable policies implemented to run the database, especially when the subscription system is introduced, might discourage users from using the platform.

9.0. CONCLUSIONS

In all, four teams of consultants were contracted to execute Activities 2.1.1 – 2.1.6 successfully and satisfactorily, and 36 postgraduate students and 152 undergraduate students were selected to contribute toward execution of these activities. About 61 percent of the graduate students and 30 percent of the undergraduate students were females. So far, 29 graduate students and all 152 undergraduate students have completed their studies and submitted to their departments. In most cases, the objectives set by the researchers for the studies were relevant to address the research problems, and the research methods were conventionally acceptable and scientifically sound to achieve those objectives. As a result, the researchers have been able to produce quality findings to guide policy making toward conservation and management of aquatic resources in Ghana and to promote the aquaculture industry in the country. The database, FishCoMGhana, is also set to serve as a repository for data and information on issues related to fisheries, coastal zone management, and aquaculture.

10.0. BIBLIOGRAPHY OF DOCUMENTS PRODUCED UNDER ACTIVITY 2.1.1-2.1.6

Activity 2.1.1. Conducting Fisheries Stock Assessment

DFAS. (2016a). The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Mid-term Report on Fisheries Stock Assessment of Some Selected Commercially Important Marine Fish Stocks in Ghana. Cape Coast: University of Cape Coast.

DFAS. (2017a). The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Final Performance Report on Fisheries Stock Assessment of Some Selected Commercially Important Marine Fish Stocks in Ghana. Cape Coast: University of Cape Coast.

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Clottey, M. (2019). Population dynamics and reproductive studies of three commercially important sparid species from Ghanaian waters. PhD dissertation. University of Cape Coast, Cape Coast.

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Ofosu, E. S. (2018). The Catch per unit effort (CPUE) and length-weight relationship of Nile tilapia (*Oreochromis niloticus*) in the Kakum Lake, Brimsu. B.Sc. Dissertation. University of Cape Coast, Cape Coast.

Frempong, N. M. (2019). Growth and mortality parameters of *Sardinella maderensis* (Lowe, 1838) landed by beach seines at Sakumono beach and their implications for management. B.Sc. Dissertation. University of Ghana, Legon. 57 pp.

Wonje, M. W. (2019). Gear diversity and selectivity in the artisanal fishery at the Tema Fishing Harbor. B.Sc. Dissertation. University of Ghana, Legon. 35 pp.

Activity 2.1.2. Conducting Research and Assessment on Marine Fisheries Governance Issues

DFAS. (2016b). The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project: Study Report on Research and Assessment on Marine Fisheries Governance Issues. Cape Coast: University of Cape Coast.

DFAS. (2019a). The USAID/UCC Fisheries and Coastal Management Capacity Building Support Project. Sustained Research in Governance Issues on Marine and Coastal Management in Ghana. Cape Coast: University of Cape Coast.

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Adonu, P. (2018). The role of women in fish processing in James Town, Greater Accra Region. B.Sc. Dissertation. University of Development Studies, Temale. 60pp.

Activity 2.1.3. Research on Fish and Shellfish of Commercial Value

Okyere, I. & Boahemaa-Kobil, E. E. (2020). Occurrence and food habits of the bagrid catfish *Chrysichthys nigrodigitatus* (Lacepède, 1803) in the Pra River Estuary, Ghana. *Journal of Fisheries and Coastal Management*,1(1): 29-34.

Asare, B., Obodai, E. A., Acheampong, E. (2019). Mangrove oyster farming: Prospects as supplementary livelihood for a Ghanaian fishing community. *Journal of Fisheries and Coastal Management*, 1(1): 8-17.

Tseku, P. D. (2016). Performance of the black chinned tilapia, *Sarotherodon melanotheron* fed different formulated feeds in a reservoir. Master's Thesis. University of Cape Coast, Cape Coast.

Johnson-Ashun, M. (2018). Effects of ginger and garlic supplements on culture performance of blackchin tilapia (*Sarotherodon melanotheron*). Master's Thesis. University of Cape Coast, Cape Coast. 168 pp.

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Odoom F. B. (2019). Assessment of some aspects of the biology and ecology of blackchin tilapia in Benya, Brenu and Fosu lagoons. B.Sc. Dissertation. University of Cape Coast, Cape Coast.

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Yakutu, S. (2019). Microbial load analysis in some selected smoked fish species in Yapei Market in the Northern Region, Ghana. B.Sc. Dissertation. University of Development Studies, Tamale. 56pp.

Kettey-Tagoe, B. (2017). Chemical composition and sensory analysis of processed and fresh skipjack tuna (*Katsuwonus pelamis*) in Tema, Greater Accra Region. B.Sc. Dissertation. University of Development Studies, Tamale. 47pp.

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Activity 2.1.5. Monitor the Biodiversity and Health of Coastal Ecosystems

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Twumasi, S. (2017). Fish community diversity and its relationship with habitat and environmental variables in the Sunyani stream. B.Sc. Dissertation. University of Energy and Natural Resources, Sunyani.44 pp.

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ANNEX VII. THE HISTORICAL EVOLUTION OF THE CENTRE FOR COASTAL MANAGEMENT AT THE UNIVERSITY OF CAPE COAST

FY 1997: University of Cape Coast (UCC) was identified as a focal institution to lead the Integrated Coastal Management (ICM) programme in Ghana as far back as 1997 when the Village Infrastructure Project (VIP) was being implemented by Ministry of Fisheries and Aquaculture Development (MoFAD) under the auspices of the World Bank. As part of that project, an ICM team was constituted in 1998 to introduce coastal management into UCC's curriculum to train students to work for governmental and non-governmental organizations dealing with coastal management issues. The then-Department of Zoology was to take oversight responsibility of this project.

FY 2001: With the ending of the VIP about 2001, the ICM programme also stalled.

FY 2002/2003: The onset of the School of Biological Sciences enabled the ICM project to be revived. An ICM library was established within the Department of Fisheries and Aquatic Sciences (DFAS), and modules were developed for inclusion in the undergraduate and postgraduate DFAS programmes. To date, various courses are presently on stream at the undergraduate and graduate levels. Although the idea for a Centre for Coastal Management (CCM) was envisioned as far back as 1997, takeoff delayed largely due of lack of funding.

FY 2009: Dr. Denis Aheto was recruited as a lecturer at DFAS to support Prof. John Blay in the teaching and the further development of the Coastal Management programme within UCC. In the same year, the USAID-supported Integrated Fisheries and Coastal Governance (ICFG) Project implemented by the Coastal Resources Center-Ghana, an affiliate of the Coastal Resources Center of University of Rhode Island (CRC/URI) was launched in Ghana.

FY 2010: DFAS signed a Memorandum of Understanding (MOU) with the Coastal Resources Center-Ghana to collaborate in executing the USAID-funded ICFG Initiative, popularly called the "Hɛn Mpoano" Project. Through this project, the proposed CCM of UCC found a promising window of opportunity to roll out coastal management programs in the country.

As a first step, the ICFG initiative, through one of its local affiliate non-governmental organizations (NGOs), Friends of the Nation, awarded an urban wetland assessment study of the Western Region to Dr. Denis Aheto on consultancy basis. Following that he was nominated by ICFG to undertake a three-week certificate short course on climate change adaptation at CRC/URI. Based on that training, the course was later replicated for district planners in the six coastal districts of the Western Region by the faculty of DFAS and funded by ICFG. The success of that initiative further encouraged ICFG to later sub-obligate additional consultancies to the department, notable among them the development of the wetlands curricula for junior high school students, training of the ICFG staff in coastal management, and the involvement of some DFAS staff in a biodiversity study of the Western Region of Ghana.

FY 2012: With financial assistance from ICFG, Prof. John Blay and Dr. Denis Aheto (then the Chair of the Department) with support of Ms. Pam Rubinoff of CRC/URI, drafted the first strategic plan (2012-2017) and developed a proposal for the formalization of CCM within UCC, which was later in the same year submitted to UCC for approval.

FY 2013: On the December 13, 2013, CCM was approved by the UCC Academic Board to be under the School of Biological Sciences, but placed in a special relationship with DFAS. The latter being as a result of lack of staff, office space, and other logistics needed to effectively run the new Centre.

Prof. John Blay was appointed as the Coordinator of the Center. The mandate of the Centre was three-fold: 1) conduct applied research; 2) run professional courses; and 3) engage in extension in coastal communities. Because of its contribution to ICFG, DFAS was encouraged to submit a proposal to USAID for an unsolicited Government-to-Government (G2G) grant to build the capacity of DFAS and fully operationalize the Centre.

FY 2014: The G2G grant for the Fisheries and Coastal Management Capacity Building Support Project (FCMCBSP) was signed on October 20, 2014 after the Centre's status within the university was clarified. The FCMCBSP Board was created in 2015 under the Chairmanship of Professor Isaac Galyuon, Department of Molecular Biology and Biotechnology. At the same time a separate CCM Board was created under the Chairmanship of the founding dean of the UCC law faculty, Prof. Bondzie-Simpson.

FY 2015: In January 2015, CCM started executing its first-year plan using existing faculty from DFAS. Within a few months, it became apparent that the workload was too much for the faculty to execute on top of their existing research and teaching duties since the grant document did not allow the project to buy back staff time from the university. Thus all activities were executed on top of the faculty's existing work load.

In the same month of January 2015, the then-head of DFAS Dr. Aheto, the Vice-Chancellor Prof. D. D. Kuupole, Centre Coordinator Prof. John Blay, and M&E Coordinator Dr. Noble Asare Asare made a two-week exchange visit to URI. During this visit, a number of new ideas and partnership arrangements were suggested, including: the J-term program, the dual-degree Ph.D. program, and the joint training of ten Ph.D. students from DFAS at URI.

FY 2016: It became very apparent that the workload at DFAS and CCM was enormous to the extent that it would not be possible to allow it deliver on its agreement with USAID in the implementation of the FCMCBSP. To address this issue, DFAS: 1) started using consultants to execute many of the key activities identified in the workplan; and 2) requested USAID to authorize the use of G2G funds to hire six full-time research assistants to assist with activity execution. In addition to this, the CCM asked SFMP to fund the stipend of two graduate students to work on the project as extension agents for CCM only.

USAID paid the Africa Lead project to conduct a capacity assessment of the CCM using the Organizational Capacity Assessment Tool used on other organizations to serve as a baseline for future monitoring and evaluation.

The Vice Chancellor recommended the position of Centre Coordinator, which had been occupied first by Prof. John Blay then by Dr. Aheto, be upgraded to a position of Director of the Centre based on the early execution of the FCMCBSP activities, which were already showing results. This upgrade was important because it gave the director leverage to negotiate within the university system where a centre coordinator could not.

FY 2017: Recruited two full-time permanent research fellows paid for by UCC;

In January 2017, the project capitalized on this increased capacity to apply for its second major grant from DANIDA, which was executed using the same staff since the new grant did not include a provision recruitment of additional staff.

In anticipation of future grant activity and the growing number of core platforms of the CCM (FishCoMGhana; conferences; short-courses; communication strategy; extension; project management), the CCM submitted a request to the central administration to consider its request for appointment of six research assistants to full-time assistant research fellow positions. This process is still under review by the university and expected to be approved by May, 2020, even though it cannot be determined.

FY 2018: CCM applied for the World Bank Africa Center of Excellence (ACE) grant, which it received in January 2019. This grant, like the DANIDA grant, is being executed with the same core group. In addition to this, CCM has acquired three smaller projects from the National Geographic Society, the French Embassy, and the Third World Academy of Science, each with no additional funding for staff.

In recognition of the international importance of the World Bank ACE Program, UCC appointed an International Scientific Advisory Board chaired by Professor Martin Tsamenyi, Emeritus Professor and Former Director of the Australian National Centre for Ocean Resources and Security (ANCoRS) as Chairman to provide needed leadership for regional impact.

FY 2020: Increasing student numbers, retirement of three full DFAS professors, the closure of the FCMCBSP (resulting in the loss of additional core staff and research assistants for CCM), and other cross-cutting issues that detracted DFAS and CCM leadership from organizational and capacity-strengthening activities forced them to look into other ways of recruiting new staff.

In its quest to address this challenge, CCM is exploring new ways of teaching and research by improving its teaching and learning environment under the Africa Center of Excellence in Coastal Resilience (ACECoR) grant, and introduce modular and online and virtual teaching programs and is developing two new partnerships in Europe mainly Germany (Leibniz Centre for Tropical Marine Research [ZMT]) and France (Research Institute for Development [IRD]).

Source: CCM Director Denis Aheto, February, 8, 2020.

ANNEX VIII. DISCLOSURE OF ANY CONFLICTS OF INTEREST

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Della E. McMillan, Ph.D.
Project being evaluated	Fisheries and Coastal Management Capacity Building Support Project
Name of Prime Organization	University of Cape Coast
Evaluation Position?	● Team Leader ☐ Team member
Evaluation Award Number *(contract or other instrument)*	N/A
USAID Project(s) Evaluated *(include project name(s), implementer name(s) and award number(s), if applicable)*	Fisheries and Coastal Management Capacity Building Support Project. UCC.
I have real or potential conflicts of interest to disclose.	☐ Yes ● No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	Della E. McMillan
Date 11/7/2020	Della E. McMillan

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Amanda Lynn Hurtak
Project being evaluated	USAID/Ghana University of Cape Coast Fisheries and Coastal Management Capacity Building Support Project
Name of Prime Organization	University of Cape Coast
Evaluation Position?	☐ Team Leader ■ Team member
Evaluation Award Number *(contract or other instrument)*	641-A18-FY14- IL#007
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	Fisheries and Coastal Management Capacity Building Support Project
I have real or potential conflicts of interest to disclose.	☐ Yes ■ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* *1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* *2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* *3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* *4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* *5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* *6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	Amanda Lynn Hurtak
Date	November 7, 2020

2

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Annie Dela Akanko
Project being evaluated	USAID/Ghana University of Cape Coast (UCC) Fisheries and Coastal Management Capacity Building Support Project (FCMCBSP)
Name of Prime Organization	University of Cape Coast
Evaluation Position?	☐ Team Leader ■ Team member
Evaluation Award Number *(contract or other instrument)*	
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	USAID/Ghana University of Cape Coast (UCC) Fisheries and Coastal Management Capacity Building Support Project (FCMCBSP), implemented by the University of Cape Coast, 641-A18-FY14- IL#007
I have real or potential conflicts of interest to disclose.	☐ Yes ■ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* *1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* *2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* *3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* *4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* *5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* *6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

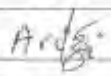
I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	11-07-2020

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Evans Kwasi Arizi, Ph.D.
Project being evaluated	Fisheries and Coastal Management Capacity Building Support Project
Name of Prime Organization	University of Cape Coast
Evaluation Position?	☐ Team Leader ☒ Team member
Evaluation Award Number *(contract or other instrument)*	N/A
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	Fisheries and Coastal Management Capacity Building Support Project. UCC.
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or possible conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations or objectives of the particular project and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	11/7/2020