



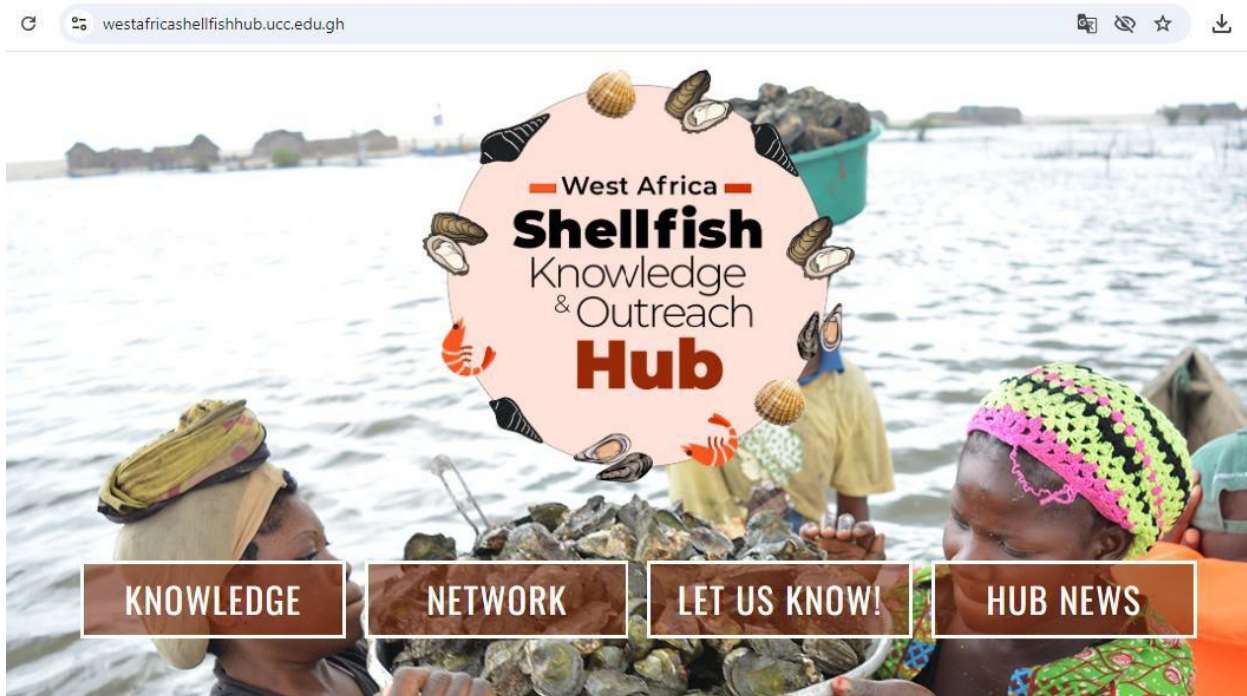
USAID
FROM THE AMERICAN PEOPLE

THE
UNIVERSITY
OF RHODE ISLAND



WOMEN SHELLFISHERS AND FOOD SECURITY

Annual Report Fiscal Year 2024



October 2024

This publication is available electronically in the following locations:

The West Africa Shellfish Knowledge and Outreach Hub

<https://westafricashellfishhub.ucc.edu.gh>

The Coastal Resources Center

<https://web.uri.edu/crc/projects/>

USAID Development Experience Clearing House

<https://dec.usaid.gov/dec/content/search.aspx>

For more information on the Women Shellfishers and Food Security Activity, contact:

USAID Women Shellfishers and Food Security
Coastal Resources Center
Graduate School of Oceanography
University of Rhode Island
220 South Ferry Rd.
Narragansett, RI 02882 USA

Citation: Women Shellfishers and Food Security (2024). Annual Report Fiscal Year 2024. Women Shellfishers and Food Security Activity (Phase II). University of Cape Coast, World Agroforestry (ICRAF), TRY Oyster Women’s Association, Development Action Association, and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 96 pp.

Authority/Disclaimer:

Prepared for USAID under the BAA-AFR-SD-2020 Addendum 01, (FAA No. 7200AA20FA0003 I) awarded on August 12, 2020, to the University of Rhode Island and entitled “Women Shellfishers and Food Security.”

This document is made possible by the support of the American People through the United States Agency for International Development (USAID). The views expressed and opinions contained in this report are those of the Activity team and are not intended as statements of policy of either USAID or the cooperating organizations. As such, the contents of this report are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.

Cover photo: A screen shot of the West Africa Shellfish Knowledge and Outreach Hub website at <https://westafricashellfishhub.ucc.edu.gh/> .

Photo credit: © 2024 West Africa Shellfish Hub.

Detailed Partner Contact Information

Karen Kent	Project Director, Coastal Resources Center (CRC), University of Rhode Island (URI)
Lauren Josephs	Deputy Project Director, URI-CRC
Brian Crawford	Consultant, URI-CRC
Daniel Hicks	AOR, USAID
Daniel Moore	AO, USAID

World Agroforestry (ICRAF)
United Nations Avenue, Gigiri
PO Box 30677, Nairobi, 00100, Kenya
Sammy Carsan

TRY Oyster Women's Association
Opposite the New Market, Old Jeshwang,
Western Division, Gambia
Fatou Janha

Development Action Association (DAA)
Near the DLVA Center Greater Accra
Entity City: Kokrobite-Accra
Lydia Sasu

Centre for Coastal Management (CCM)
University of Cape Coast,
Cape Coast, Ghana
Ernest Chuku
Isaac Okyere
Denis W. Aheto:

For additional information on partner activities:

URI-CRC	http://www.crc.uri.edu
ICRAF	http://www.worldagroforestry.org/
CCM/UCC	https://ccm.ucc.edu.gh/
TRY	https://www.facebook.com/TRYoysters/
DAA	https://daawomen.org/

TABLE OF CONTENTS

	<u>Page</u>
TABLE OF CONTENTS.....	iii
LIST OF TABLES	iv
LIST OF FIGURES.....	v
ACRONYMS.....	viii
EXECUTIVE SUMMARY.....	1
I. INTRODUCTION.....	3
1.1 Activity Background.....	3
1.2 Objective of This Report.....	4
2. PROGRESS ON OBJECTIVE 1: Site-based research to demonstrate the value of integrated systems in Ghana and The Gambia	4
2.1 Theory of Change, Location of Field Sites, and Priority Strategic Approaches.....	4
2.2 Women Shellfishers' Empowerment.....	7
2.3 Gender Sensitive Shellfishery Co-Management.....	19
2.4 Mangrove Co-Management.....	31
2.5 Landscape Food Production Systems.....	43
2.6 Objective 1 Challenges and Lessons Learned.....	48
3. PROGRESS ON OBJECTIVE 2: West Africa Shellfish Knowledge and Outreach Hub	49
3.1 Establishment and Operationalization of the Shellfish Hub	50
3.2 Social Media.....	51
3.3 Toolkit Extension	51
3.4 Peer to Peer Exchange Visits/Study Tours	52
3.5 Advocacy/Awareness Raising Targeting Regional Institutions	52
3.6 Regional Webinar for Policymakers	54
3.7 Coordination with Projects in the Sector.....	54
3.8 Document Linkages to Global Context.....	54
3.9 Objective 2 Challenges and Lessons Learned.....	56

4. EXPECTED OUTCOMES AND INDICATORS OF ACHIEVEMENT	57
REFERENCES.....	67
APPENDIX 1: Baseline Data Table.....	71
APPENDIX 2: Summary of Priority Approaches Implementation Across Sites	72
APPENDIX 3: The Gambia Press Briefing.....	75
APPENDIX 4: Oyster Landings Data 2023 and 2024.....	80

LIST OF TABLES

	<u>Page</u>
Table 1: Prioritization of strategic approach implementation at each site.....	7
Table 2: Phase I (FY23) and Phase 2 (FY24) literacy and numeracy graduates.	9
Table 3: Foni belongs communities, names of community closed areas (CCAs).	27
Table 4: Comparisons of total catch and harvesting activity between 2023 and 2024	29
Table 5: Incentives and disincentives for mangrove conservation/restoration work.....	32
Table 6: Technical challenges affecting mangrove restoration and possible solutions.	38
Table 7: Summary of Community Consultations on Status of CAP Actions.....	40
Table 8: Tree species and quantity planted in Bullock and Lamin in FY24.....	45
Table 9: Tree species survival rates of FY23 plantings in Bullock.....	45
Table 10: Performance Indicator Tracking Table.....	57
Table 11: FY25 and LOA Targets for USAID Standard Indicator EG.10.2-2.	60
Table 12: Summary for USAID Standard Indicator EG.10.2-4 for FY24.	61
Table 13: Complete list of training events conducted under the Activity in FY24, i.	62
Table 14: Organizations receiving capacity development support.....	65
Table 15: Universities reported in FY24.....	66
Table 16: Baseline data collection and other related activities.	71
Table 17: Outputs by Strategic Approach and Site.	72
Table 18: Comparisons of total catch and harvesting activity between 2023 and 2024.....	80

LIST OF FIGURES

Figure 1: Sites for field-based activities in the Activity extension:.....	6
Figure 2: Role play session.....	8
Figure 3: Phase two literacy and numeracy learners with the dignitaries at the graduation event.....	9
Figure 4: A Phase two literacy and numeracy learner demonstrating addition.....	10
Figure 5: The President of NOHA receiving the Association’s Certificate of Registration.....	10
Figure 6: President of NOHA receiving a donation of gloves from TRY.....	11
Figure 7: NOHA members receiving training on oyster biology r.....	12
Figure 8: Study tour participants to the Joal Oyster Women Association in Senegal.....	14
Figure 9: Traditional charcoal making from tree trunks in Bulock.....	14
Figure 10: Piles of oyster shell aggregated over years at the Lamin landing site in The Gambia.....	16
Figure 11: A shell milling machine (left) and bagged milled shell product (right).	16
Figure 12: Value chain of bivalve fishery shell by-product and shell products.....	17
Figure 13: USAID visitors planting mangrove seedlings during the field visit in the Densu Delta.....	18
Figure 14: The USAID team and DOPA at Tsokomey landing beach.....	19
Figure 15: DOPA members announcing the 7 th annual closed season for oyster harvesting.....	19
Figure 16: Dr. Eric Krampah from UCC presenting the results of oyster data for 2023.....	20
Figure 17: Oyster shell restocking for 2024.	20
Figure 18: Map of Densu Delta, Ghana, showing the sampling sites.....	21
Figure 19: A UCC team sampling using quadrats.....	21
Figure 20: Key species encountered at the study sites.....	22
Figure 21: TRY oyster aquaculture farmers in Lamin maintaining mesh bags of oysters at low tide	23
Figure 22: Collecting cockles from the source site.....	24
Figure 23: Cover of the draft Narkwa Co-management Plan.....	25
Figure 24: Proposed boundaries of the Foni Bolongs fisheries management plan area.....	26
Figure 25: The Foni Bolongs Oyster and Cockle Co-Management Committee.....	27
Figure 26: Alkalos endorsing the Foni bolongs co-management planning process.....	28
Figure 27: Landed oysters during the 2024 open season in the Densu.....	30

Figure 28: Hybrid meeting session between the Activity team and the Ghana FC	31
Figure 29: Practical sessions of mangroves training.....	35
Figure 30: Transporting mangrove seedlings to the planting site. (January 2024)	35
Figure 31: Planting mangrove seedlings in the Densu.....	35
Figure 32: Mangrove restoration area for 2024 in blue outlines.....	36
Figure 33: The different ages of the mangrove planted 2024, 2023 and 2017	37
Figure 34: Participants on a field visit (September 2024) to observe results	37
Figure 35: Naa Ashama Karley and Forestry Commission Representative, Thomas Acquah.....	37
Figure 36: Narkwa community members taking part in a CAP feedback session.....	41
Figure 37: Coconut and mango fruits growing in homesteads at the Densu.	44
Figure 38: Coconut and mango trees demo farms planted in FY23 in Narkwa,.....	44
Figure 39: indigenous green leafy vegetables that can be produced in coastal ecosystems.	46
Figure 40: Women shellfishers in training on vegetable home-gardening.....	47
Figure 41: Fatou Darboe, the Director of Food Technology Services.	48
Figure 42: Organogram of the West Africa Shellfish Knowledge and Outreach Hub	50
Figure 43: Snippet of the homepage of the West Africa Shellfish Knowledge and Outreach Hub...	51
Figure 44: Snapshot of the newly developed toolkit outreach materials	52
Figure 45: Scenes from the Accra conference.....	53
Figure 46: The URI session participants at the 9th World Fisheries Congress in Seattle.	53
Figure 47: Snapshot of the meeting session between WSFS and the West Africa Blue team	54
Figure 48: The number of participants attending multiple Activity trainings in FY24,.....	62
Figure 49:: Comparison of catch amounts and CPUE Densu, Ghana.....	80
Figure 50: Comparison of catch amounts and CPUE Bullock, The Gambia	81
Figure 51: Comparison of catch amounts and CPUE Siaka Tenda, Lamin, The Gambia.....	82
Figure 52: Comparison of catch amounts and CPUE) Lamin Lodge, Lamin, The Gambia	83
Figure 53: Trend in the number of harvesters and total catch 2024 in Densu, Ghana.	84
Figure 54: Trend in the number of harvesters and CPUE 2024 Densu, Ghana.	84
Figure 55: Trend in the number of harvesters and total catch 2024 Bullock, The Gambia	85

Figure 56: Trend in the number of harvesters and CPUE 2024 Bullock, The Gambia.....	85
Figure 57: Trend in the number of harvesters and total catch 2024 Siaka Tenda, The Gambia	86
Figure 58: Trend in the number of harvesters and CPUE 2024 Siaka Tenda, The Gambia	86
Figure 59: Trend in the number of harvesters and total catch 2024 Lamin, The Gambia	87
Figure 60: Trend in the number of harvesters and CPUE 2024 Lamin, The Gambia.....	87

ACRONYMS

CAP	Community Action Plan
CCM	Centre for Coastal Management
CRC	Coastal Resources Center
DAA	Development Action Association
DOPA	Densu Oyster Pickers Association
DFTC	Daa Fisheries Training Center
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information Systems
ICRAF	World Agroforestry (International Centre for Research in Agroforestry)
IRB	Institutional Review Board
KAP	Knowledge Attitudes and Practice
LULC	Land Use Land Cover
MEL	Monitoring Evaluation and Learning
MDD-W	Minimum Dietary Diversity for Women
NOHA	Narkwa Oyster Harvesters Association
SES	Stakeholder Empowerment Score
SFMP	USAID/Ghana Sustainable Fisheries Management Project
ToC	Theory of Change
TOT	Training of Trainers
TRY	TRY Oyster Women's Association
UCC	University of Cape Coast
URI	The University of Rhode Island
USAID	United States Agency for International Development
VSLA	Village Savings and Loan Association
WASNET	West Africa Shellfish Network
WEAI	Women's Empowerment in Agriculture Index

EXECUTIVE SUMMARY

The Women Shellfishers and Food Security Activity seeks to address the need for greater attention to food security for women shellfishers and their families while improving biodiversity conservation of the ecosystems on which their livelihoods depend. The Activity aims to strengthen the evidence base, increase awareness, and equip stakeholders to adapt and apply successful approaches to rights-based, ecosystem-based, participatory co-management of shellfisheries by women in mangrove ecosystems in West Africa. The first two-year phase of the Activity starting in September 2020 resulted in: the first-ever [participatory regional assessment](#) of women-led shellfisheries in the 11 coastal West African countries from Nigeria to Senegal; six technical studies published on site-based research in Ghana and The Gambia that tested the Theory of Change linkages between women's shellfish co-management, livelihoods, mangrove conservation, and nutrition, and; a community of practice and [Toolkit on women's shellfisheries co-management in West Africa](#).

A three-year Activity extension was approved in September 2022, with two components:

Extension Objective 1: Demonstrate the biodiversity and socio-economic value of more fully integrated rights-based co-management of linked shellfish-mangrove-proximate landscape food ecosystems in two countries in West Africa: Ghana and The Gambia.

Activity partners continued to work at four sites in Ghana (Densu and Narkwa) and The Gambia (Lamin and Bulock) in FY24 to implement four integrated strategic approaches that were prioritized and customized for each site (women shellfishers empowerment, gender sensitive shellfishery co-management, mangrove co-management, and adjacent landscape food production systems). Partners trained 391 people in sustainable natural resources management and/or biodiversity conservation. Of these, 90 percent were women, 94 percent were resource users, and 47 percent benefitted from two or more training events in FY24. The two new women-led shellfishery co-management planning processes in Narkwa and Bulock using the Toolkit were further developed, resulting in legal registration of the Narkwa Oyster Harvester's Association (NOHA) in Ghana and two of the community harvester associations participating in the Bulock/Foni planning in The Gambia. The new plans are on track for validation in FY25. Shellfishers used the Activity piloted methodology to document their oyster landings and effort data for a second consecutive year at three sites. The TRY Oyster Women's Association (TRY) established 20 individual oyster aquaculture farms and 0.11 hectares of restocked cockles at Lamin in The Gambia. A shell value chain study found that restocking shells for oyster reef restoration provides the highest economic returns by far of any use. The Densu Oyster Picker's Association (DOPA) planted another 18.8 hectares of mangroves. Mangrove Community Action Plans (CAPs) were completed and facilitated consensus to guide priority actions at all four sites. Implementation of landscape food production systems enabled communities to plant 1,481 additional food and non-food trees and shellfishers were trained in home gardening and nutritious recipes. New technical reports on site-based work completed in FY24 included:

- [Multi-stakeholder review of mangrove restoration initiatives to improve biodiversity.](#)
- [A review of mangrove and forestry co-management.](#)
- [Developing Community Action Plans for Mangroves Co-Management.](#)
- Value Chain and Economic Analysis of the Shell By-Product of Bivalve Fisheries in Ghana and The Gambia: An Assessment of Oyster, Cockle, and Clam Shells.
- Assessment of Shellfish Species Diversity and Land Cover at Mangrove Restoration Sites within the Densu Delta Ramsar Site

Extension Objective 2: A functional West Africa Shellfish Knowledge and Outreach Hub.

As part of the scaling strategy for the shellfisheries co-management community of practice in West Africa, the Activity established and operationalized the West Africa Shellfish Knowledge and Outreach Hub (Shellfish Hub) as a platform for promoting the development, sharing and exchange of knowledge products, tools and best practices to inform and catalyze scaling. The Centre for Coastal Management-Africa Centre of Excellence in Coastal Resilience at the University of Cape Coast in Ghana hosts the Shellfish Hub. The web platform went live in FY24 at <https://westafricashellfishhub.ucc.edu.gh/>, with associated social media accounts on X, Facebook, and LinkedIn. The Activity also established a West Africa Shellfish Network (WASNET) to connect stakeholders of shellfisheries within the sub-region. Based on the WASNET guidance manual and network membership advertisement circulated in FY24, 26 applicants applied for membership. A maiden virtual meeting and official launching of WASNET is scheduled for FY25.

The Activity finalized two shellfisheries co-management toolkit outreach materials in English and French for use at the community level, a simple illustrated guide and an animated audio-visual. In FY25, the audio-visual will be translated into local languages of the 11 Activity countries. Partners disseminated Activity results and approaches at two major conferences in FY24, the Africa Blue Economy Conference, in Ghana and the 9th World Fisheries Congress in Seattle, Washington, briefed the Abidjan Convention, and coordinated with the FAO FISH4ACP project in Senegal and The Gambia, and with West Africa Blue initiatives in Sierra Leone and Guinea, leading to productive synergies. Finally, the Activity produced a report entitled, “West Africa Women-led Shellfisheries Co-Management in a Global Context: Case Studies From Africa, Asia, and South America,” featuring takeaways for practitioners from these cases. The exercise underscored that delegation of use rights to women shellfishers and integration of nutritional landscape food systems into shellfisheries co-management are rare globally. A peer-to-peer regional study tour from six countries in the sub-region to Ghana is planned for October 2025.

Lessons learned include that integrating implementation of the Activity strategic approaches as required to inform the Objective 1 theory of change continues to be feasible and appears to be beneficial based on the FY23 and FY24 experience, and that the West Africa community of practice on women-led shellfisheries co-management is gaining momentum and addresses a long neglected need for information, knowledge sharing, and stakeholder networking.

I. INTRODUCTION

I.1 Activity Background

The Women Shellfishers and Food Security Activity (hereinafter referred to as the “Activity”) seeks to address the need for greater attention to food security for women shellfishers and their families while improving biodiversity conservation of the ecosystems on which their livelihoods depend. The Activity aims to strengthen the evidence base, increase awareness, and equip stakeholders to adapt and apply successful approaches to rights-based, ecosystem-based, participatory co-management of shellfisheries by women in mangrove ecosystems in West Africa. Results of the first two-year phase of the Activity starting in September 2020 included:

- The first-ever participatory regional assessment of women-led shellfisheries in the 11 coastal West African countries from Nigeria to Senegal available at https://pdf.usaid.gov/pdf_docs/PA00Z67C.pdf.
- Six technical studies published on site-based research in Ghana and The Gambia that tested the Theory of Change linkages between women’s shellfish co-management, livelihoods, mangrove conservation, and nutrition (see next bullet for link).
- A community of practice fostered around development and dissemination of a toolkit on women’s shellfisheries co-management in West Africa (hereafter referred to as the ‘Toolkit’) available at https://pdf.usaid.gov/pdf_docs/PA00ZHT6.pdf. See Annex J for 11 individual country assessments and the technical studies.

A three-year Activity extension was approved on September 9, 2022. The original Activity goal was revised slightly to include mangrove and estuarine ecosystem restoration in addition to conservation, and to remove expected impact on reducing anemia in women of reproductive age. The revised Activity goal is as follows:

*“Foster the adoption and scaling-up of an integrated approach to conservation **and restoration** of mangrove and estuarine ecosystems in West Africa that provides cross-sectoral benefits in terms of gender equality and women’s empowerment, economic development, and household food resiliency.” (USAID 2022)*

These changes were made because, the initial two-year phase of the Activity demonstrated that drivers and threats to mangrove and estuarine ecosystems are complex, degradation in some ecosystems is already significant, and the full range of management options including both conservation and restoration need to be considered to influence mangrove and estuarine health. Also, Phase I research did not find a relationship between shellfisheries health, shellfish consumption, and anemia prevalence in shellfisher women of reproductive age despite the high iron and zinc content of oysters. This is most likely due to the limited quantities of shellfish consumed as part of the shellfishers’ overall diet and to other factors that may have a stronger influence on anemia prevalence. Additional research

on this relationship will not be pursued in this extension, which will focus its limited resources on fewer components that are more strongly linked to biodiversity outcomes.

The key Activity components of the extension (USAID, 2022) are:

Extension Objective 1: Demonstrate the biodiversity and socio-economic value of more fully integrated rights-based co-management of linked shellfish - mangrove - proximate landscape food ecosystems in two countries in West Africa: Ghana and The Gambia.

Extension Objective 2: A functional West Africa Shellfish Knowledge and Outreach Hub.

1.2 Objective of This Report

This report documents progress on Activity implementation at the end of the second year of the three-year extension (FY24), October 2023 – September 2024.

2. PROGRESS ON OBJECTIVE 1: Site-based research to demonstrate the value of integrated systems in Ghana and The Gambia

2.1 Theory of Change, Location of Field Sites, and Priority Strategic Approaches

The Theory of Change for the three-year extension site-based research in Ghana and The Gambia is:

IF implementation of women shellfishers empowerment, shellfishery and mangrove co-management, and adjacent landscape food production systems is integrated, THEN shellfishery and mangrove health, dietary diversity, and shellfisher livelihood resilience will improve.

Site based activities fall under three integrated strategic approaches as per the original Activity theory of change:

- Gender sensitive shellfishery co-management
- Mangrove co-management
- Integration of adjacent landscape food production systems

Women shellfishers empowerment and organizational capacity development of women-led shellfishery associations are an important crosscutting strategic approach that is integral to the gender sensitive shellfishery co-management model that is the focus of this Activity and includes: promoting women shellfisher use rights over shellfishery resources; organizational development of women's shellfishing associations; livelihood development and household economic resilience for women shellfishers (e.g., selling oyster shells, other income generating activities for closed seasons, literacy,

financial literacy, and village savings and loan associations), and focus on shellfishing households for improved landscape food systems.

Gender sensitive shellfish co-management is focused on molluscs and bivalves, including oysters, cockles, and periwinkles, which are harvested predominantly by women in West Africa including in The Gambia and Ghana. The co-management approach is a process of management in which the government shares power with resource users, with each given specific rights and responsibilities relating to information and decision-making, resource use, and enforcement. The Activity extension is strengthening gender sensitive shellfish co-management in the Densu and the Tanbi where approved shellfishery co-management plans delegating exclusive use rights to shellfisheries to resource user associations are in place. The Activity extension also facilitates development of new gender sensitive shellfishery co-management plans in Narkwa and Bulock using the Toolkit and peer to peer learning as resources.

Mangrove co-management, like shellfisheries co-management, is a process of management in which the government shares power with resource users, with each given specific rights and responsibilities relating to information and decision-making, resource use, and enforcement. Women shellfishers are among the resource users of mangroves, but the stakeholder group for mangrove ecosystems is broader than women shellfishers. The Activity extension facilitates mangrove co-management planning and management actions to address key threats and drivers of mangrove degradation. The focus is on those most intricately linked to shellfisheries habitat health, building on the mangrove situation analysis developed in the Activity's first phase. Considering past challenges on mangrove restoration, the Activity will follow an "option by context" approach to inform community-based restoration anchored in local solutions such as "social fencing." Mangrove replanting is not the highest priority in some areas (Tanbi and Bulock sites) and the Activity will therefore seek to support community actions that also promote conservation, natural regeneration, and better practices in handling diverse mangrove genetic resources.

Landscape Food Systems is an approach that expands the shellfish co-management approach to include assessment of the adjacent landscape of these estuaries and lagoons, particularly in the context of improving food resilience. Phase I Activity research demonstrated that oysters and cockles are not typically consumed in high quantities, so they must be supplemented with other food sources for a healthy and adequate diet. Food insecurity is seasonal, and if closed seasons are considered to manage shellfish, a readily available source of household food or income could be lost for several months in a year, which could exacerbate food insecurity. During this Activity's first phase, nutritious food portfolios were co-developed with local communities at each site. The adjacent landscape and food production systems activities implemented during the Activity extension are a result of the integrated model studied in the first phase.

Site-based activities are implemented at two sites in each country (Figure 1). These sites are a subset of the original six sites studied in the initial phase of the Activity and represent different contexts and

are described more fully in the extension’s implementation plan (USAID, 2022). The Tanbi and Densu are located adjacent to large, urbanized areas and each has an existing shellfish co-management plan. Bullock and Narkwa do not have co-management plans and are in more rural areas. Priority Strategic Approaches per site vary as shown in Table I. Activities implemented at each site were customized accordingly and are detailed by Strategic Approach in the sections below.

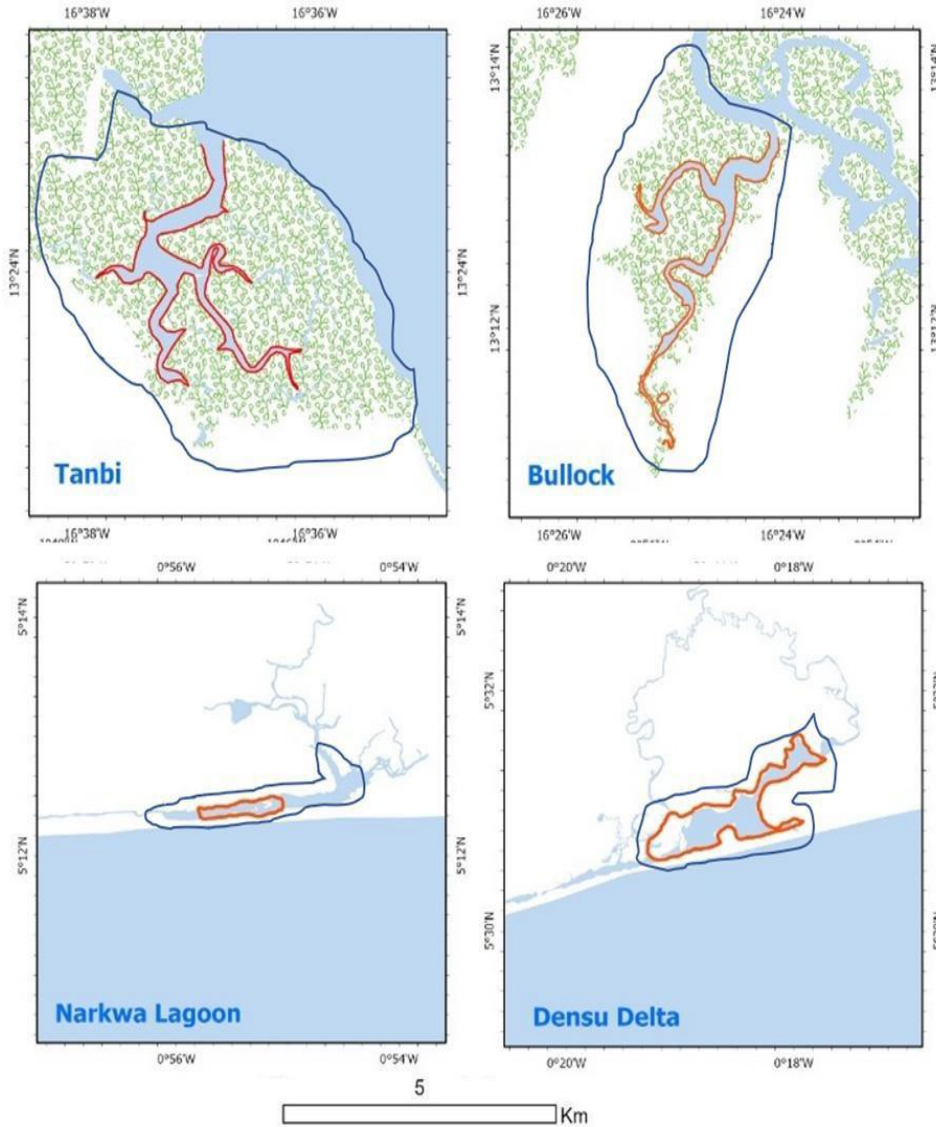


Figure 1: Sites for field-based activities in the Activity extension: in The Gambia – Tanbi (Lamin section) and Bullock; Ghana – Narkwa and Densu Estuaries. (Red polygons indicate areas where oyster harvesting occurs, and the blue polygons indicate planned areas of Activity activities in general and expected influence).

Table 1: Prioritization of strategic approach implementation at each site.

Site	Strategic Approaches			
	Women shellfishers empowerment	Gender sensitive shellfish co-mgt (fishery status)	Mangrove co-mgt (health status, threat score)	Landscape food systems (opportunity)
Densu	Medium	Low (underexploited)	High (low health 26)	Low (limited opportunity)
Narkwa	Medium	High (overexploited)	Low (moderate health 14)	High (good opportunity)
Tanbi	Medium	Low (underexploited)	Medium (moderate health 28)	Medium (limited opportunity)
Bulock	Medium	High (overexploited)	Low (high health 20)	High (good opportunity)

SOURCE: Adapted from USAID, 2022.

Objective 1 results will be documented as per the Monitoring and Evaluation Plan for Site Based Activities in Furtherance of the Research Agenda (CRC, 2022) jointly developed by Activity partners. The baseline data table established in FY23 (Appendix 1) was updated with available FY24 data.

The role of each Activity partner in the extension phase site-based activities is documented in the Revised Three-Year Extension Implementation Plan and Monitoring Evaluation and Learning Plan (Women Shellfishers and Food Security Activity, 2022) jointly developed by Activity partners.

Progress to date on the implementation of the priority strategic approaches indicated in Table 1 at each site is discussed in the following sections and is summarized in Appendix 2, Table 17, which mirrors Table 1 above with detailed activities and outputs for FY23 and FY24.

2.2 Women Shellfishers’ Empowerment

2.2.1 Densu

2.2.1.1 Leadership and Advocacy Training

DAA organized the second annual leadership and advocacy training workshop at the DAA Fisheries Training Center (DFTC) on March 19, 2024 for Densu Oyster Pickers Association (DOPA) leaders from the three Densu communities (Bortianor, Tetegu, and Tsokomey) to refresh their memories and scale up their leadership and advocacy skills. Thirty-two participants were trained (27 new, five previously trained in FY23, and 97 percent female). The content included: leadership roles and conflict management; how to identify advocacy issues; and how to carry out advocacy activities.

The methods employed by the facilitators were based on experiential and adult learning techniques including plenaries, PowerPoint presentations (mostly pictorials), discussions, group work presentations, short videos, and roleplays (Figure 2). The refresher training enables DOPA leadership to work in unity and transparency, consider each other's point of view, and come to a common consensus on issues that they need to address. At the end of the training, participants expressed the following views:

- Leaders are not necessarily born, but they can be made through experience and training. One can assume leadership position based on the situation at hand to help resolve it.
- A good leader shows examples of servitude for followers to emulate.
- People see and perceive things differently depending on where one is looking from. There is therefore the need to bring all views together to draw a common conclusion in a group.

Some of the previously trained participants have assumed leadership positions in the various VSLA groups as presidents and the literacy and numeracy classes as class representatives.



Figure 2: Role play session.

2.2.1.2 Village Savings and Loan Associations (VSLA) Revitalization and Replication

Village Savings and Loan Associations (VSLA) is one of the approaches that supports the socio-economic resilience of women shellfishers who are sustainably managing Ghana's shellfish resources and habitats and is among the best practices the Women Shellfishers and Food Security Activity aims to demonstrate. The purpose of the VSLA is to create awareness of group savings systems which can help group members to save on their own and obtain very low interest loans.

DAA did not establish new VSLAs in FY24, but strengthened the existing six groups; three formed in FY23 and three from the previous USAID Sustainable Fisheries Management Project (SFMP). This was because most group members were faced with inconsistent income from oyster picking due to early flooding of the Densu in 2024. The usual oyster closed season livelihood of carrying fish at fish landing sites was also inconsistent as fish catch was not plentiful throughout most of the last year. The VSLA

members were encouraged to maintain the VSLA even if they are unable to regularly contribute money to save, as regular meeting attendance helps to strengthen their groups.

2.2.1.3 Literacy and Numeracy Training

The literacy and numeracy training is a three-year program that started in FY23 to empower women shellfishers with the skills needed to improve their livelihoods and effectively manage shellfish resources. The first phase covering basic numeracy and literacy in local dialects (Ewe and Ga) ended in September 2023. The second phase covering literacy in English and further numeracy started in January 2024 and ended in September 2024. DAA organized a one-day refresher training for five facilitators on March 20, 2024 at DFTC conducted by the same three trainers (two males and a female) from the Ga South Municipal Assembly Complementary Education Agency who trained the facilitators last year (a training of trainers approach). The training offered a peer review for facilitators with the trainers, and an opportunity to learn from the FY23 training experience.

Learners who successfully completed the second phase graduated on September 10, 2024 (Table 3 and Figures 3 and 4). Six participants who were not part of the first phase enrolled during the second phase. At the end of FY24, most of the learners could write their names and phone numbers, sign their signatures, and do basic arithmetic (Figure 4). Some could read simple sentences in local dialects. Some learners dropped out along the way because of difficulty in managing the combined pressures on their time, especially due to financial issues at home.

Table 2: . Phase 1 (FY23) and Phase 2 (FY24) literacy and numeracy graduates.

Community	Phase 1 enrolled	Phase 1 graduated	% graduated	Phase 2 enrolled	Phase 2 graduated	% graduated
Bortianor	25	24	96%	25	15	60%
Tsokomey	32	27	84%	27	25	93%
Tetegu	15	6	40%	10	8	80%
Total	72	58 (2M; 56F)	81%	62	48 (1M; 47F)	77%



Figure 3: Phase two literacy and numeracy learners with the dignitaries at the graduation event.



Figure 4: A Phase two literacy and numeracy learner demonstrating addition.

2.2.2 Narkwa

2.2.2.1 Shellfishers Association Establishment and Registration

UCC facilitated establishment of the Narkwa Oyster Harvesters Association (NOHA) to provide a unified body and collective voice of shellfishers towards an implementation of an oyster fishery co-management plan in the Narkwa lagoon. Since its formation in March 2023, membership has increased from 35 to 49 with new members continuing to join. NOHA drafted and finally adopted a constitution on March 19, 2024. The association was formally registered on April 3, 2024, with the Ekumfi District Assembly under the Ghana Enterprise Agency. NOHA is currently led by five executives: Madam Adjoa Kyeaba as President, Afua Saakowa as Vice President, Madam Ama Gyasiwah as Organizer, Mr. Emmanuel Mensah as Secretary, and Paulina Nyani as Treasurer. The certificate of registration of NOHA was presented to the Association through its President during a capacity building workshop at Ekumfi Narkwa (Figure 5). NOHA members meet every other Tuesday to discuss and plan activities aimed at advancing sustainable shell fishing practices and improving the livelihoods of its members.



Figure 5: The President of NOHA receiving the Association's Certificate of Registration from a representative of the Ghana Enterprise Agency at the Ekumfi District Assembly.

2.2.2.2 Peer to Peer Support Among Women's Shellfisher Associations

The TRY Oyster Women's Association (TRY) in The Gambia donated 50 pairs of high-quality cotton gloves to NOHA through the UCC hosted Shellfish Hub. The donation was received by the president of NOHA during one of the association's meetings on February 6, 2024 (Figure 6). The gloves will significantly reduce the risk of hand injuries during oyster harvesting and processing by NOHA members. This act of generosity underscores the budding partnerships between women-led shellfish resource user associations in West Africa. Together with the peer to peer training provided by DOPA to NOHA over the last two years, such actions highlight how these partnerships can be harnessed for the scaling of sustainable shellfisheries management practices in the subregion.



Figure 6: President of NOHA receiving a donation of gloves from TRY through the UCC hosted Shellfish Hub.

2.2.2.3 Oyster Biology, Water Quality Monitoring, Oyster Reef Restoration, Mangrove Nursery Management and Replanting, Leadership and Advocacy, VSLA, Literacy and Numeracy Capacity Building Training

UCC, with support from DAA and DOPA, organized a three-day capacity-building workshop for NOHA from June 18–20, 2024 at the Narkwa Community Center (Figure 7). This workshop for 43 participants followed up on the capacity building training workshop for selected NOHA members at DAA during the peer-to-peer study tour to DOPA in August, 2023. The training workshop featured interactive sessions and practical demonstrations to equip NOHA members with skills in oyster biology, water quality monitoring, mangrove nursery management and replanting, shell restocking, and simple landings data collection. Participants were also trained on VSLA, leadership and advocacy, and introduction to literacy and numeracy. At the end of the training workshop, NOHA members had a deeper understanding and enhanced skills on these topics that will empower them to address financial challenges, engage in ecological stewardship, and contribute to the long-term ecological health and sustainability of oyster shellfishery in the Narkwa lagoon.



Figure 7: NOHA members receiving training on oyster biology (left), mangrove nursery management and planting (middle), and literacy and numeracy (right) at Narkwa Community Center.

2.2.3. Lamin

2.2.3.1. Leadership and Advocacy Training

TRY trained 29 Lamin shellfishers (100 percent female) in leadership for advocacy on August 16, 2023, the second annual training on this theme. Training objectives focused on identifying different leadership components (styles, functions, skills, and qualities), and how to carry out conflict resolution. Examples of how women shellfishers' leadership and advocacy contribute to good governance at the level of individual shellfisher communities and at the national level include the following recent examples from the Tanbi Wetlands National Park oyster and cockle fisheries co-management area of which Lamin is a part.

- TRY notified the Lamin Alkalo, the tourism Ministry, the Department of Parks and Wildlife Management about men at Lamin illegally cutting mangroves to make a tourism park. Government stopped the infraction and mediatized the incident to raise awareness.
- Leadership and advocacy capacity among shellfishers enabled their active participation in updating the Tanbi Oyster and Cockle Co-Management Plan facilitated by the FISH4ACP project in FY24.
- TRY leadership and community members in Kamalo were among the public groups and citizens who notified the government of inappropriate land allocation activities encroaching on the Tanbi Wetlands National Park (a Ramsar site). The outcry triggered the government to establish a multi-sectoral task force of three ministries and five other government bodies to review and make recommendations on the issue. Findings were made public in a 2024 press briefing (Appendix 3).

2.2.4. Bullock

2.2.4.1. Leadership and Advocacy Training

TRY trained 30 shellfishers in Bullock (100 percent female) in leadership and advocacy on August 14, 2024. The training methodology was the same as used in Lamin. Before the FY23 training Bullock participants had not previously benefitted from such trainings for women shellfishers. Participants continued to strongly appreciate the perspectives they gained to better lead their newly formalized shellfisher groups at the community level as they organize for co-management. Strengthened leadership and advocacy capacity also enables TRY and more recently formed women shellfisher associations, such as the one in Bullock, to contribute to and benefit from national development initiatives. For example, the President of the Bullock shellfisher association is now a very active member of the Oyster Advisory Committee (OSAC) established with the support of FISH4ACP at the national level to coordinate interventions in the sector. Also, in October 2024, the U.S. government's [Millenium Challenge Corporation CEO visited The Gambia](#) to announce plans for new investment that includes an objective to “maximize the economic benefits of the Gambia River for the people.” TRY was selected to brief the delegation, accompany them on a boat trip up the Gambia River, and meet with shellfishers near Bullock. The U.S. delegation was informed about the current and potential economic and environmental contributions of women led rights-based shellfisheries co-management to sustainable development in The Gambia, and, importantly, the awareness of Ministers and other Gambian government participants in the delegation was raised.

2.2.4.2 Study Tour to Senegal

The Director of TRY and three women shellfishers (one from Lamin and two from Bullock) went on a study tour to work with the Joal Oyster Women Association in Senegal from December 17 to 21, 2023 (Figure 8). The trip provided peer to peer learning on leadership and advocacy for shellfisheries governance and livelihoods, shellfish farming and value addition practices, and briquette making techniques, materials, and ideas for replicating this activity in The Gambia.

One of the participants used the knowledge gained on the study tour to start her own soapmaking enterprise and now trains other women shellfishers on soapmaking for income generation (Figure 8). Charcoal making for income and fuel is one of the drivers of deforestation in The Gambia, including of mangrove forests. The Women Shellfishers and Food Security Activity plans to introduce briquette making from leaves and other fibrous waste in Bullock and Lamin based on hand powered presses previously piloted by other projects in The Gambia. During the Senegal study tour, mechanized briquette production was observed (Figure 9), but TRY will proceed with the hand powered option with sustainability and scalability in mind due to its lower capital investment and operating costs.



Figure 8: Study tour participants to the Joal Oyster Women Association in Senegal (left). One participant started a soap making enterprise and trains other shellfishers on soapmaking (right).



Figure 9: Traditional charcoal making from tree trunks in Bullock (left). Briquette making from leaves and other fibrous waste observed during the Senegal study tour (middle and right).

2.2.5 Cross Cutting: Participatory Shell Value Chain Study

UCC conducted a bivalve shell value chain study in Ghana and the Gambia to examine the economic potential of shell by-products, opportunities, and challenges within shell value chains (Okyere et al., 2024). Insights from the FY23 participatory value chain study tour in Ghana by DOPA with UCC and DAA staff, and scoping by TRY and the FAO FISH4ACP project in The Gambia, helped shape the methodology. The study focused on three key bivalve species: the West African mangrove oyster (*Crassostrea tulipa*), West African bloody cockle (*Senilia senilis*), and the Volta clam (*Galatea paradoxa*), and gathered data across four coastal locations in Ghana (Densu delta, Narkwa lagoon, Whin estuary, and Big Ada at the Lower Volta River) and four locations in The Gambia (Kamalo, Old Jeshwang, and Lamin within the Tanbi wetlands; and Kartong within the Allahein wetlands). Data was collected in May and June 2024 targeting four main actors: shell harvesters (primary producers), people who mine shells from old shell beds that are not based on recent shellfish harvesting activities (miners), people

who buy shells in small quantities from primary producers and shell miners for onward sale to shell millers (aggregators), and processors (manufacturers of shell products).

Shells were primarily generated as a by-product of shellfish processing and were used for various purposes and products (Figures 10, 11, and 12). The key uses found by this study were milling into granular powder for animal feed formulation; lime production (for use as paint by the construction industry and pond fertilization in aquaculture); domestic use for controlling erosion and land reclamation. The Gambian shellfishers used the oyster shells for oyster culture while the Densu shellfishers used the shells for reef enhancement. Shells were mainly sold, with shells at the peri-urban areas (Densu, Ada, Lamin, and Old Jeshwang) priced about two to three times higher than shells in more rural areas (Narkwa and Kartong). Prices of shells in The Gambia (US\$0.04-US\$0.12 per kg) were also about four times higher than in Ghana (US\$0.01-US\$0.04 per kg). The study identified five main actors in the bivalve shell value chains across Ghana and The Gambia: shell generators (mainly women shellfish harvesters and a few men shell miners), shell aggregators, semi-finished shell product producers, end-product manufacturers, and end users. Findings indicated that shell processors in Ghana generated more income, especially due to the high demand from the poultry industry.

The results suggest that women shellfish harvesters are highly constrained in deriving the full benefits at the different nodes of the value chain beyond production and sale of the shells. Confounding factors, including production cost, equipment and other fixed costs, transport, low demand from local markets in The Gambia, and marginal profits in Ghana, seriously challenge the potential of women harvesters to effectively engage in the shell milling business for production of granular shell product. Transitioning to feed formulation would be even more difficult, as the average cost of procuring and installing a feed formulation machine alone is USD 5,867 in Ghana, and USD 11,596 in The Gambia, which is not affordable for the individual shellfishers and the shellfisher associations. Government support for women shellfish harvesters through national women's economic empowerment policies and programs to fund start-up costs, particularly for establishing shell milling enterprises, could elevate them within the value chain. However, this must be gauged against the limiting factors of sufficient production of shells that ensures continuous availability of raw materials all-year round for a viable and sustainable gendered enterprise in the case of Ghana, and a viable model that minimizes the processing cost and offers milled shell products at prices competitive to the prices of the product imported from Senegal-including meeting the quality demand-in the case of The Gambia.

Re-use of bivalve shells for reef enhancement emerged as the most economically profitable option, yielding 716% to 2,350% gains per year over and above the profit made if shells were sold or milled.

The results also highlight the need to promote re-use of bivalve shells (importantly oyster shells) for reef enhancement. This emerged as the most economically profitable option (yielding 716 percent to 2,350 percent gains per year over and above the profit made if shells were sold or milled). The Densu

women shellfishers have been pioneers in using oyster shells for reef enhancement as a management measure based on a gendered rights-based shellfisheries co-management approach. For areas in The Gambia where there are stockpiles of oyster shells, options for supporting the women to establish shell processing enterprises need to be explored as only a limited proportion of shells produced could be used for reef enhancement or oyster culture.

The study provides recommendations to promote gender-focused business opportunities for women shellfishers to maximize the benefits from the bivalve shells they produce, including support strategies for the women to participate in the shell milling enterprise, research to optimize the cost-effective and environmentally friendly lime production, and promotion of shell utilization for reef enhancement and oyster culture. In FY25, UCC will organize stakeholder meetings in Ghana and The Gambia to disseminate the results of the study, including discussions on opportunities for women shellfishers to maximize benefits from shells.



Figure 10: Piles of oyster shell aggregated over years at the Lamin landing site in The Gambia.



Figure 11: A shell milling machine (left) and bagged milled shell product (right).

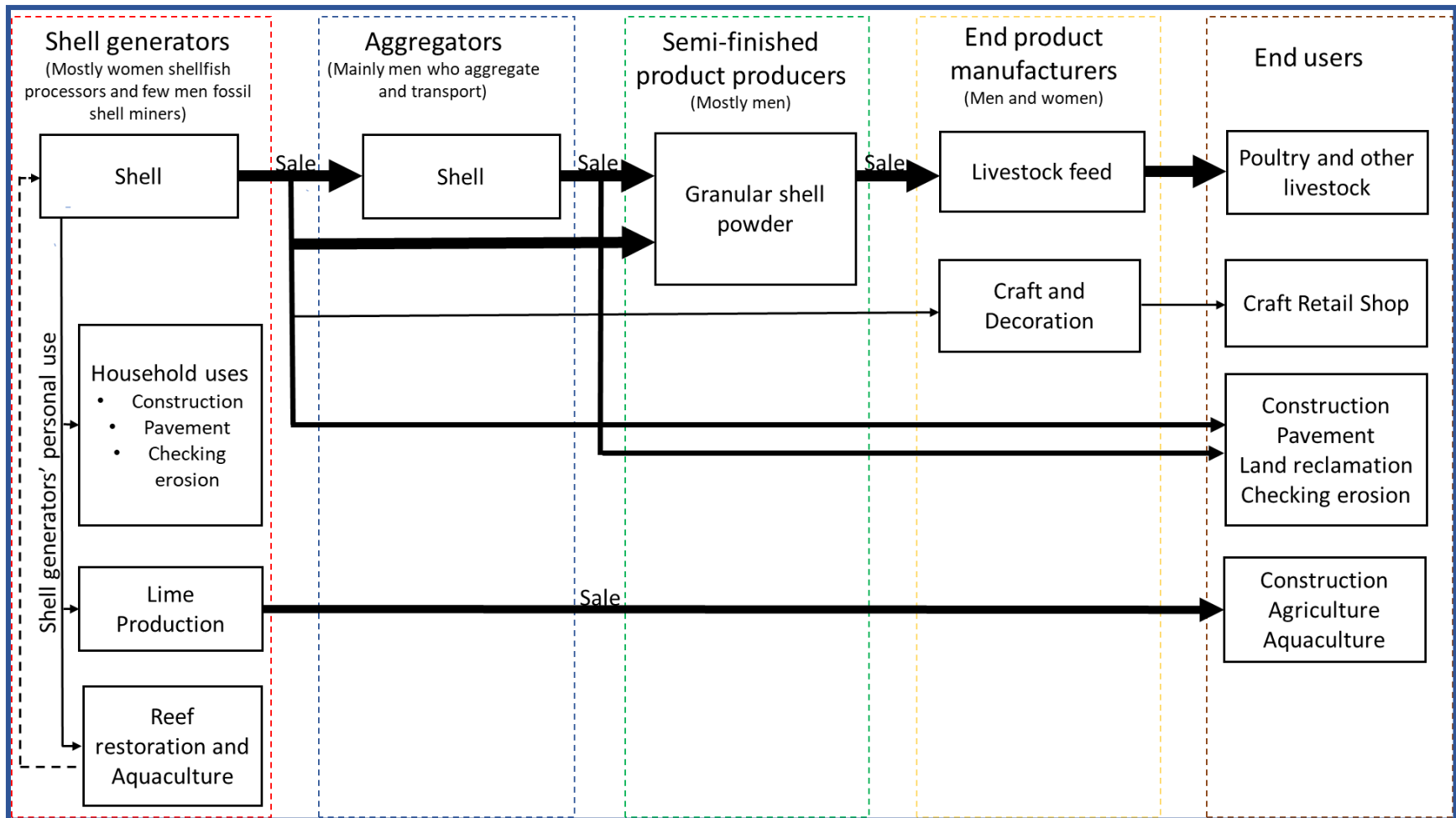


Figure 12: Value chain of bivalve fishery shell by-product and shell products.

2.2.6 Crosscutting - USAID Site Visit in Ghana

On February 17, 19, and 23, 2024, Daniel Hicks, USAID/Washington Biodiversity Advisor and a USAID delegation of up to 14 participants visited Women Shellfishers and Food Security Activity activities in Ghana. The objectives of the visit were to:

- Provide USAID/Washington, West Africa Regional, and Ghana Missions an opportunity to learn about the Women Shellfishers and Food Security Activity and visit Activity sites in Ghana.
- Provide visitors an opportunity to observe and discuss the Activity's ecosystem-based co-management approach with implementing partners and beneficiaries.

The delegation visited NOHA at Ekumfi Narkwa in the Central Region on the 17th. UCC. Professor Denis Aheto, Director of the Centre for Coastal Management (Africa Centre of Excellence in Coastal Resilience) at UCC commended USAID for its continuous support for sustainable fisheries in Ghana. Dr. Beatrice Obiri of ICRAF talked about measures being taken to integrate other landscape food systems into shellfish livelihoods. NOHA members shared insights from capacity building trainings they received towards oyster and mangrove co-management. The delegation observed oyster harvesting and processing techniques and visited landscape food crop demonstration farms.

On the 19th, Dan Hicks and Carl Merck from USAID, met with 30 DOPA members, implementing partners DAA, UCC, and ICRAF, a representative of the traditional authority, and the Ga South Municipal Assembly Zonal Fisheries Officer at DFTC. On the 23rd, the USAID team of 14 briefly visited the DFTC before proceeding to Tsokomey where they were greeted by DOPA members and visited the mangrove restoration site (Figures 13 and 14). They saw mangroves planted during the USAID/Ghana Sustainable Fisheries Management Project (SFMP) in 2017 and those planted by the Women Shellfishers and Food Security Activity in 2023. The visitors transplanted 60 mangrove seedlings as a testament to their field visit and witnessed a demonstration of oyster shell restocking. Bernice Agorogo, President of DOPA expressed DOPA's profound appreciation to USAID for their invaluable support to DOPA to help restore the depleted oysters and shellfish in the Densu Delta through mangrove restoration. Mr. Jonathan Commey, the traditional authority representative also thanked USAID for their unrelenting support for DOPA and appealed for more of such support.



Figure 13: USAID visitors planting mangrove seedlings during the field visit in the Densu Delta.



Figure 14: The USAID team and DOPA at Tsokomey landing beach. Brush parks, a local fishing technique are visible in the background and represent another form of mangrove and fisheries resource use in the Delta.

2.3 Gender Sensitive Shellfishery Co-Management

2.3.1. Support Priority Shellfish Co-management Actions at Densu and Tanbi

2.3.1.1 Densu - Closed and Open Season Sensitization

DOPA observed the 7th annual oyster closed season from November 30, 2023 to April 30, 2024 (Figure 15). The 7th open season event took place on the April 29, 2024 at Tsokomey. A total of 117 participants representing UCC, the Fisheries Commission, NOHA, the traditional Chief “Sakumo We”, Fish processors, Bortianor Chief fisherman, and brush park fishermen attended. The event included a report back session of the previous harvest season’s oyster landings data led by UCC (Figure 16).



Figure 15: DOPA members announcing the 7th annual November 30, 2023 to April 30, 2024 closed season for oyster harvesting in the Densu.



FY23 Oyster Landings Data

Total: 103 Metric Tons

Estimated value: \$16,500- \$41,000

CPUE: 100 to 300 kg/person/day

Harvesters: 2–33 harvesters/day

Figure 16: Dr. Eric Krampah from UCC presenting the results of oyster data for 2023 at the 7th opening season on April 29, 2024.

2.3.1.2 Densu- Oyster Shell Restocking

DOPA carried out the annual oyster shell restocking exercise on February 2, 2024, to maintain healthy and productive oyster reefs in the delta that provide sustainable livelihoods for women shellfishers and a variety of other important ecosystem services. This year, the weight of the restocked shell was recorded using the simple procedure used for the oyster landings data collection. A total of 112.4 kg shells was restocked (Figure 17). The shell value chain study conducted by UCC this year detailed above found that shell restocking is by far the highest value use for oyster shells despite demand for other uses.



Figure 17: Oyster shell restocking for 2024.

2.3.1.3 Shellfishery Biodiversity Study in Densu Replanted Mangrove Areas

UCC conducted a shellfish biodiversity assessment at mangrove restoration sites in the Densu Delta on January 18 and 19, 2024. This baseline study examined land cover and shellfish species diversity at two mangrove restoration sites in the Densu Delta; one site replanted in 2017 as part of the USAID/Ghana SFMP (SFMP site) and another site replanted in 2023 with the support of the USAID Women Shellfishers and Food Security Activity (Figures 18 and 19). These mangrove restoration

efforts were aimed at enhancing shellfisheries production to support the livelihoods of women shellfish harvesters and provide other ecological benefits. The study aimed to inform future assessments of mangrove restoration impacts on shellfisheries biodiversity.

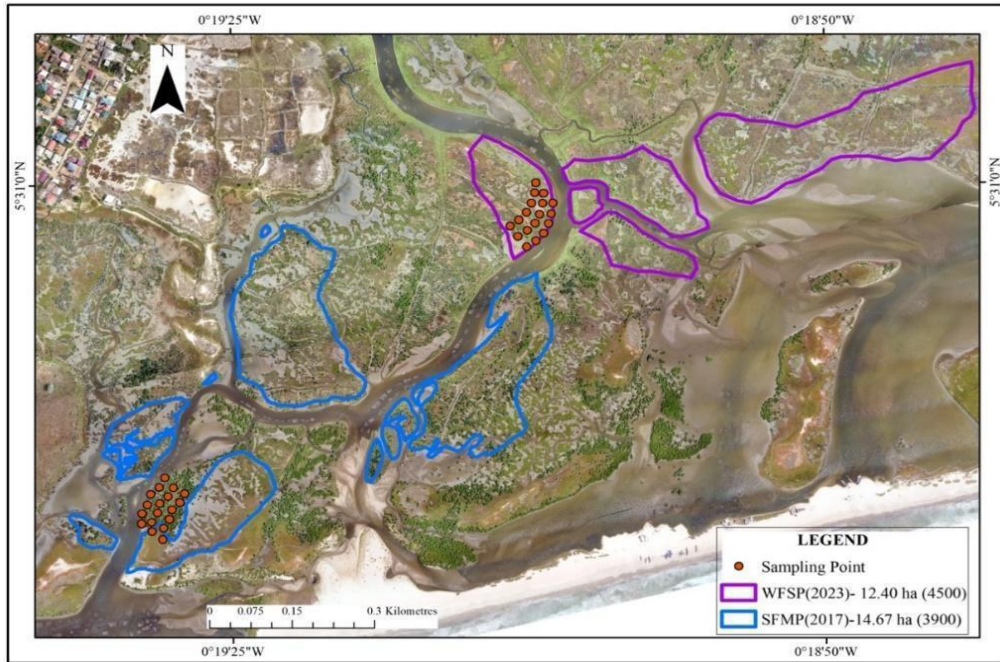


Figure 18: Map of Densu Delta, Ghana, showing the sampling sites.



Figure 19: A UCC team sampling using quadrats

Results show that the differences in land cover at the SFMP 2017 replanted mangrove site (Site 1), predominantly covered by mangroves, and the Women Shellfishers and Food Security Activity 2023 newly replanted mangrove site (Site 2), predominantly covered by grass, has considerable bearing on the development and diversity of shellfish fauna at each of these sites as follows:

- Seven shellfish species were encountered at Site 1 (2017) compared to four at Site 2 (2023).

- Purple mangrove crabs as well as hermit crabs occurred only at Site 1 (2017) (Figure 20).
- West African mangrove oysters occurred exclusively on the mangrove roots of the replanted mangroves at Site 1 (2017) where they constitute nearly 50 percent of the shellfish community with the highest mean density of 170 oysters per square meter.
- Larger mean size of mud creepers at Site 1 (2017) compared to Site 2 (2023).

The overall higher species diversity and richness at Site 1 (2017) compared to the newly planted Site 2 (2023) highlight the benefits of DOPA’s mangrove reforestation efforts for improving the Densu Delta ecosystem fisheries productivity and related shellfisheries livelihoods as well as broader ecosystem benefits. The final report is forthcoming.

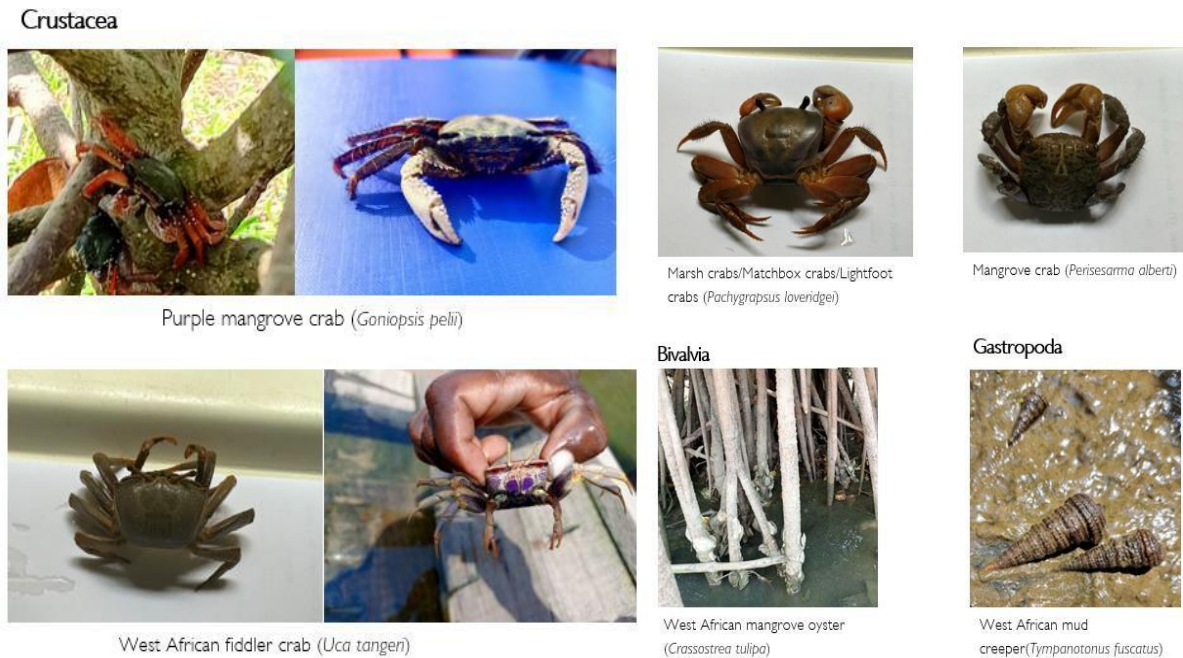


Figure 20: Key species encountered at the study sites.

2.3.1.4 Lamin Scale-up of Family Oyster Farm and Provide Start Up Package

Following a study tour to Senegal organized by the FAO FISH4ACP project, TRY began efforts to adopt an observed oyster culture technique not currently used in The Gambia: the use of hard plastic mesh bags. In FY23, TRY imported mesh material from Senegal, trained 20 beneficiaries, and constructed mesh bags. Following approval by the Department of Parks and Wildlife Management, in FY24 TRY constructed two tiered frames using 12mm iron rods, deployed the bags (five per individual), and stocked each bag with 100 juvenile oysters taken from the wild on November 26, 2023 (Figure 21). The total cost of materials including training, deployment of frames and workmanship totaled 213,500 GMD (about USD \$3,000). The iron rods are expected to last at least five years and the mesh bags 20 years. Individual farmers monitored bi-weekly to remove fouling using

handheld brushes, sort and replace dead oysters, and reposition mesh bags on platforms. Monthly monitoring by TRY was co-conducted with beneficiaries and included oyster morphometric and mortality data. Lower mortality and higher growth were observed for oysters on the upper tier of the frame, probably due to the mud contact and turbidity on the lower tier. A [Report on Establishment of Oyster Aquaculture in Lamin \(TRY, 2024\)](#) provides additional detail (TRY, 2024). Other lessons learned to date and key recommendations are as follows:

- Overall, positive oyster growth
- Few mortalities
- Undamaged platforms and mesh bags
- Need for bags with additional mesh sizes to accommodate different oyster sizes as they grow.
- Need to increase bags from five to ten for each beneficiary to enable them to sort and transfer large oysters to control carrying capacity, thus allowing for more growth
- A budget for boat hire and other logistics is a sustainability challenge for TRY monitoring support, but morphometric data collection should continue to inform growth patterns, including mortality rate and income after harvest

Key recommendations:

- Engage the Department of Fisheries to support continuity of the farms, especially data collection on growth, analysis, and dissemination of results
- Collect data on harvest and sales after one year
- Conduct a cost-benefit analysis to understand the viability of the farms after one year.



Figure 21: TRY oyster aquaculture farmers in Lamin maintaining mesh bags of oysters at low tide.

2.3.1.5 Lamin Cockle Transplanting

The main goal of this activity is to rebuild cockle stocks depleted because of overharvesting. The TRY Lamin group therefore agreed to a communal ownership approach for the site. TRY trained and facilitated the Lamin women shellfishers on site selection and demarcation of boundaries, collection of juvenile cockles from a donor site near Denton Bridge in the Tanbi, and planting cockle seedlings in the selected site at Lamin. TRY planted 6,440 cockle seedlings in an area of 55 x 20 meters (0.11 ha) in two phases on June 19 and July 20, 2024. Cockle seedling size was measured to help in future monitoring of abundance and growth patterns. Shell height ranged from 1.1 to 4.8 centimeters with an average of 2.2 centimeters. The number of cockles planted was estimated by counting the number of cockles in a standard measure (Figure 22).



Figure 22: Collecting cockles from the source site (top). Measuring the Lamin area and the cockle seedling stock (920 cockles per standard bucket)(middle). Broadcasting cockles at the Lamin site (bottom).

2.3.2. Develop Shellfish Co-management Plans at Narkwa and Bullock Using the Toolkit Steps

2.3.2.1 Narkwa

UCC engaged stakeholders, initiated, and has facilitated a shellfishery co-management process at Narkwa beginning in FY23 guided by the 13 steps outlined in the Toolkit entitled, “Empowering Women for Shellfish Management, Food Security and Biodiversity Conservation in Estuarine Ecosystems of West Africa” ([Women Shellfishers and Food Security Project, 2022](#)). Activities included consultation with chiefs and elders of Ekumfi Narkwa, formation of women-dominated shellfishers association (NOHA), definition of the Narkwa oyster fishery and boundaries for management, stakeholder analysis, a situation analysis of the oyster fisheries, and institutional arrangements for co-management. These actions represent steps 1 to 4 in the process. A nine-member co-management committee was commissioned to continue with steps 5 to 9 in the development of the shellfishery co-management plan, which continued throughout FY24 and included, setting the vision/purpose, goals and objectives, instituting management measures, setting up penalties and sanctions and identifying resources for the implementation of the co-management plan. A working draft of the co-management plan (Figure 23) was developed and is under review. When completed, the plan will be submitted to the Ministry of Fisheries and Aquaculture Development (MOFAD) and Fisheries Commission for approval in FY25.

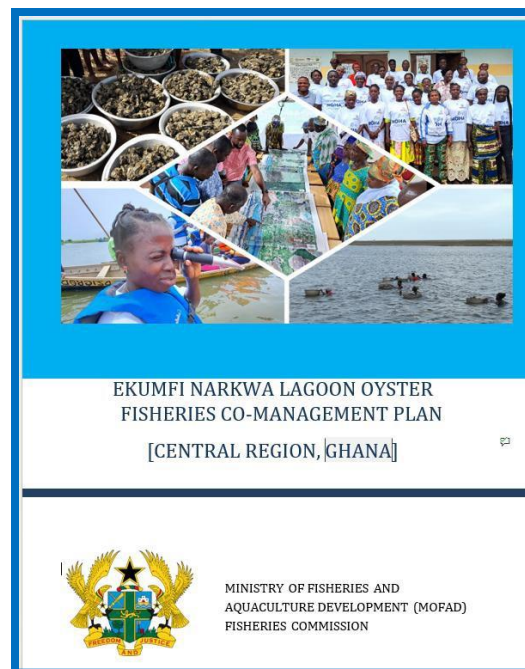


Figure 23: Cover of the draft Narkwa Co-management Plan.

2.3.2.2 Bulock

TRY facilitated and led the Bullock co-management planning process to date through a series of eight monthly stakeholder meetings/trainings in Bullock in FY23 and an additional ten meetings/trainings in FY24. A major outcome of the planning process in FY23 was the expansion of the proposed management area at the Bullock site. The new shellfish co-management plan for Bullock was originally proposed to cover only areas directly surrounding the Bullock bolong. Due to the interconnected use of oyster and cockle resources in a much larger area and the need to engage all relevant stakeholders to achieve effective management of a shared resource, the proposed management area was expanded (Figure 24). Corresponding with the expanded management area, the proposed name of the new shellfish co-management plan was revised to the Foni Bolong Shellfishery Co-Management Plan; 'Foni' is the local name of the region covered by the newly proposed management area boundaries.



Figure 24: Proposed boundaries of the Foni Bolongs fisheries management plan area and location of oyster and cockle harvesting communities around the Foni Bolongs.

A key challenge was how to enable TRY to conduct more inclusive engagement with stakeholders in the other Foni bolongs communities given that the institutional arrangements for decision-making and management of the Foni bolongs requires organized representation at this broader, ecosystem-wide scale. Coordination with the FAO FISH4ACP project resulted in resources added to TRY's agreement with FISH4ACP in FY24 to accommodate additional outreach and engagement in these communities. While boundaries of the co-management plan are now understood to be broader than Bullock bolong, Integrated Activity efforts and resources for the planned site-based testing of the four integrated

strategic approaches of the Women Shellfishers and Food Security project will remain focused on the more limited Bulock bolong area.

Important developments in FY24 included legal registration of two of the ten shellfisher community level groups and establishment of the Foni Bolong Oyster and Cockle Co-Management Committee (Figure 25) with members who are resource users/shellfishers representing each of the ten stakeholder communities. The draft constitution to be validated in FY25 includes four-year term limits renewable once for individual committee members, annual contribution of 3000 GMD (about USD \$42) for each community group membership, retaining 40 percent of proceeds from penalties and fines at the committee level, and creation of a solidarity fund to support members to obtain affordable credit, for ceremonial events, and to support management plan implementation. In the Foni bolongs Common Harvesting Grounds (CHGs), a five-month annual open season from January to May is planned. In addition, each of the ten communities decided to define Community Closed Areas (CCAs) exclusive to their community where the community defines the management measures (Table 3). The boundaries of these will be included on the map in the next draft of the plan.



Figure 25: The Foni Bolongs Oyster and Cockle Co-Management Committee.

Table 3: Foni bolongs communities, names of community closed areas (CCAs), and period of closure.

No.	Community	Name of CCAs	Period of Closure	Period of opening/harvesting
1.	Tumani Tenda	Bolong Debi	10 months	2 months
2.	Suma Kunda	TBC	10 months	2 months
3.	Faraba Sutu	TBC	TBC	TBC
4.	Kafuta	Kombongoto bolong	11 months	1 month
5.	Bulock	Gaskong	10 months	2 months
6.	Bajana	TBC	10 months	2 months
7.	Sutsinjang	Bolong Golo	10 months	2 months

No.	Community	Name of CCAs	Period of Closure	Period of opening/harvesting
8.	Besse	Bolong Horom	11 months	1 month
9.	Berefet	TBC	10 months	2 months
10.	Sotokoi	TBC	10 months	2 months

TRY's outreach on the Women Shellfishers and Food Security Activity and the Foni bolongs co-management planning process in FY24 targeted local government authorities such as village Alkalos, and Village Development Committees in addition to shellfishers, especially in Bajana, Berefet, Sotokoi, Sutsinjang, Besse, Kafuta, Suma Kunda and Faraba Sutu villages. Consensus outcomes included:

- Member communities participating in the management planning development process should be supported to establish their associations and be legally registered
- All Alkalos should make a formal pronouncement in support of the co-management plan planning and implementation stages (Figure 26). Eight of the nine have signed written endorsements in FY24.
- Training on organizational and resource management should be conducted
- Share the draft Co-management plan to all Alkalos for review and input
- Affiliation to TRY was raised and agreed upon
- Community level closed bolongs should be prioritized



Figure 26: Alkalos endorsing the Foni bolongs co-management planning and implementation process.

TRY is planning an all-stakeholder meeting to finalize the Foni Bolongs Oyster and Cockle Shellfisheries Co-Management Plan in November/December 2024 and a national level validation meeting in February 2025. To facilitate implementation and capture learning from the application of the Toolkit at these two new co-management sites, Activity partners participate in quarterly meetings to share the status of the process and current drafts of the Narkwa and Bullock co-management plans.

2.3.3 Crosscutting: Development and Implementation of Simple Landings and Income Data System

UCC, URI, TRY, and DAA collaborated to develop a simple landings data collection methodology and a field guide to pilot the methodology starting in FY23 at Lamin, Bullock, and Densu. The objectives of this activity are to:

- Collect basic information that is useful for oyster harvesters’ decision making on sustainable management of the oyster resources/stock to ensure the fishery is not overfished. The basic data needed to determine if the fishery is underfished, overfished, or fully exploited is Catch Per Unit Effort (CPUE). This includes landings data and effort data by individual harvesters.
- Provide information for long term trends analysis of overall annual catch/landings and value of the oyster harvest.
- Pilot a data collection system that can be sustained by the oyster harvesters as a practice that is integral to behaviors that are considered by the women as essential for their own responsible stewardship of the resources (just as closed seasons, size limits and gear restrictions now are), and from which information can be utilized and analyzed in partnership with the Department of Fisheries and Academia.

The core rationale of the methodology is to collect daily harvest data during the open season from all harvesters every day by simply counting and recording the number of containers of each type they harvest. This involves one-time (or infrequent) calibrations of the weight of unshucked and shucked oysters in the various containers habitually used. In addition to the calibration information, daily catch data is collected including date, number of each type of container full of oysters, number of harvesters, among others. Market data is also sampled on the place of sale, type of market, and prices. UCC continued to support data collection by DAA/DOPA and TRY and provides consolidation and analysis.

Results to date for FY23 and FY24 for The Gambia and Ghana are summarized in Table 4. (see also Figure 27). Daily catch, number of harvesters, and CPUE during the open season are graphed by site in Appendix 4.

Table 4: Comparisons of total catch and harvesting activity between the 2023 and 2024 harvest seasons.

Country	Site	Year	Total Catch (mt)	Total Catch (kg)	Number of Harvsters/Day		
					Max	Min (>0)	Average
Ghana	Densu	2023	103.35	103347	33	1	3
		2024	23.95	23951	12	2	1
The Gambia	Bullock	2023	50.96	50976	35	2	9
		2024	62.35	62349	46	1	8
	Siaka Tenda	2023	34.66	34661	16	4	6
		2024	26.18	26175	25	1	8
	Lamin Lodge	2023	45.11	45110	26	2	6
		2024	73.28	73281	33	1	8

The general trend from all the sites is a drop off in harvest rates during the first month, after which, CPUE tends to level off. An initial decline in landings and CPUE is typical after seasonal closures. This does not necessarily indicate the oyster stocks are overharvested as many years of CPUE data are needed to make that determination. In the Densu, flooding due to heavy rains and releases of water from the Weija Dam, interfere with oyster harvesting activities. In FY24, the Densu catch was less than a quarter of the FY23 catch. Extreme flooding contributed to this, but other factors such as a less comprehensive data collection effort may also explain the results. These data will be shared and discussed with shellfishers and others in FY25 to better understand the results.

TRY, DAA, UCC, and URI continued to develop simple visualizations to share and discuss results with stakeholders through meetings in FY24. A chapter will be added to the simple landings data collection methodology and field guides on visualization tools. Anticipated outcomes of the data collection system are the engagement of shellfishers in responsible management through data sharing, generation of information on fishing pressure, and new fisheries data to inform the oyster co-management planning process and adaptive management going forward. The intention is to integrate landings data sharing into the two new co-management plans at Narkwa and Foni bolongs as a management measure that must be implemented at the individual harvester level just like closed seasons and size restrictions that have almost universal voluntary compliance, rather than relegate it to the monitoring section of the plans where it may be viewed as the responsibility of specialists. Communities in the Foni bolongs in The Gambia were oriented in this way early in the co-management planning process and take an active role in finding solutions for successful and sustainable data collection.



Figure 27: Landed oysters during the 2024 open season in the Densu.

Data and results were shared with the Fisheries Departments in Ghana and The Gambia to encourage them to provide this function in the future. In FY24, UCC facilitated a meeting between the Women Shellfishers and Food Security Activity partners and the Ghana Fisheries Commission (FC) (Figure 28)

to share the Activity’s pilot methodology, experience, and the 2023 landings data. The meeting was also to promote the FC’s adoption and scaling of the participatory data collection approach at the other shellfishing sites outside of the scope of this Activity. This was part of the plan to transition this as a project pilot system to a state-owned data acquisition approach where the Ghana FC and the Department of Fisheries in The Gambia can own the process together with the shellfishers and carry out the data analyses for decision making. One of the FC’s aims in Ghana is also to more accurately value and include all fisheries in the calculation of Ghana’s Gross Domestic Product (GDP) to better document the sector’s contribution to the economy. At the end of the meeting, the FC assigned the following responsibilities: 1) The Ga South Zonal Officer to monitor and support the Activity activities at the site level, 2) Monitoring and Evaluation Officers to receive the data, identify additional areas where no shellfisheries data are collected and begin working on collecting data, and 3) The Fisheries Scientific Survey Division to work on data analysis.



Figure 28: Hybrid meeting session between the Activity team and the Ghana FC.

2.4 Mangrove Co-Management

2.4.1 Mangrove Restoration and Management Best Practice at Densu and Tanbi

2.4.1.1 Multi-stakeholder Review of Local Mangrove Restoration Initiatives, Opportunities, and Challenges on Improving Biodiversity

Multistakeholder reviews conducted helped map and document a broad range of stakeholders’ actions in mangrove restoration and associated biodiversity enterprises involving women shellfisheries, brush park fisheries, traditional authorities, Forest and Fisheries Commissions/Departments, projects, NGO’s and INGO’s, donors and others. This is helping raise awareness on possible areas of synergy for resource co-management and avoid duplication of effort and poor targeting of important livelihood work. Mapping of actors helped identify, scope, roles, and engagement approach used by various stakeholders in supporting mangrove biodiversity conservation and restoration work. Reviews built on the stakeholder forums conducted in the Densu, Ghana and Banjul, The Gambia in FY23. Results from secondary desk reviews with key informant consultations in FY24 are available to Activity partners and a wider audience to help identify key actors for engagement and collaboration in the report entitled, “Multi-stakeholder review of mangrove restoration initiatives to improve biodiversity

in Ghana and The Gambia” (Carsan et al., 2024). The reviews helped identify incentives and disincentives on mangrove ecosystem conservation and restoration by four main stakeholder types. Incentives were regarded as anything that encourages change in behavior to produce a desired outcome such as more productive and sustainable women shellfisheries while disincentives are deterrents. Better understanding of the incentive frames helped Activity partners better connect with the various stakeholders. This analysis is shown in Table 5.

Table 5: Incentives and disincentives for mangrove conservation/restoration work by stakeholder type.

Stakeholder	Incentives	Disincentives
NGO's:	Climate change resilience and mitigation	Inadequate and short-term funding
	Ecosystem restoration	Weak enforcement of laws and polices
	Livelihoods and food security	Systems that do not secure land tenure
	Increase in fish recruitment and stock	Political will and power imbalance
	Coastline protection, ecotourism	
Academia	Opportunity to do research	Research outputs not utilized
	Provide evidence-based decisions/policy	Lack of resources to undertake research
	Funding for capacity development	Poor linkage between science, policy, and practice.
	Livelihood improvement	
	Environmental conservation	
	Career development	
Government	Encouragement from resource users	Lack of collaboration among government agencies in managing the ecosystem
	USAID support, e.g., through DAA efforts encourage the government to provide their support	Lack of resources in government institutions
	Improved ecosystem to support the development of other sectors	Some traditional councils don't know the importance and the usefulness of the resources
		Taboos are no longer recognized in our traditional set up
Community	Mangroves help to get more oysters and shellfishes and this is beneficial for health and income generation	Lack of tools and equipment for the work, e.g., wellington boots and cutlass, etc.
	Grow both white and red mangrove to enable more oysters to be harvested	Lack of diversified source of livelihood to support families during closed seasons
	The oyster project will help to grow not only mangroves but other trees like coconut and other fruits	Lack of financial support to workers within the duration of planting to harvesting.
		Flooding caused by Weija dam opening

As a result of the multi-stakeholder reviews, updates on outcomes integrated into ongoing implementation by the Activity and stakeholders in FY24 include the following:

In Ghana:

- Governmental institutions (Wildlife Division of The Forestry Commission, Fisheries Commission, Environmental Protection Authority, Metropolitan and District Assemblies, Ministry of Food and Agriculture, Survey and Meteorological Services Department), Universities, the Council for Scientific and Industrial Research, and NGOs, among others, are responsible for the protection and conservation of coastal ecosystems. Local communities, government, policy makers, and relevant stakeholder efforts are however much needed for effective management, utilization, and conservation. The concept of co-management is appreciated as a means of conserving and managing the available natural resources.
- Collaboration with stakeholders such as the Weija dam authorities has led to better management of dam releases, minimizing their impact on restoration sites.
- The value of engaging traditional authorities/chiefs responsible for land allocation for both coastal area restoration and agricultural activities is important. For example: a) during the Narkwa lagoon shellfisheries co-management planning process, Narkwa communities, and NOHA added needs for land to establish food production areas, and b) DOPA communities in Densu are experiencing pressure on land for settlement, frequently contributing to deforestation and mangrove resource fragmentation.
- The need to increase the capacities of women shellfishers, forest commission officers, and local authorities to undertake mangrove restoration under co-management approaches is continuous.

In The Gambia:

- On-going and recently completed initiatives have been implemented to improve mangrove ecosystem conservation and restoration work, and at least five CBOs are involved in aspects of mangrove resource co-management (see text boxes).

Mangrove Initiatives	Community Based Organizations
<ul style="list-style-type: none"> • The Ministry of Environment, Climate Change and Natural Resources in partnership with the French Development Agency (AFD) (under development) • Conservation and Restoration of The Mangrove Ecosystem in The Gambia Through the REDD+ Mechanism (2022 – 2052) • The Climate Resilient Fishery Initiative for Livelihood Improvement in The Gambia (PROREFISH) funded by the Green Climate Fund (2022-2027) • The Women Shellfishers and Food Security Project (2020-2025) • FAO-FISH4ACP (2020-2025) • The Large-Scale Ecosystem-based Adaptation Project (2018 to 2024) • NEMA-CHOSSO (2012-2019) • Enhancing Resilience of Vulnerable Coastal Areas and Communities to Climate Change in the Republic of Gambia (2013 – 2018) 	<ul style="list-style-type: none"> • All-Gambia Forestry Platform (AGFP) • Community Action Platform on Environment and Development (CAPED) • West Africa Bird Study Association (WABSA) • Kanifing Municipal Council • TRY Oyster Women’s Association

- The need to sensitize other mangrove user groups was identified. For example, TRY notified the government of two cases of illegal actions in the Tanbi on which the government acted. These are highlighted under outcomes of the TRY leadership and advocacy training above.
- There is growing appreciation on the conservation value of a more intact mangrove resource in parts of Bulock and Tanbi as a source of greater biodiversity goods and services such as oyster fisheries and ecotourism, especially around Lamin Lodge in the Tanbi.

The promotion of the shellfish co-management in the Densu in Ghana and the Tanbi in The Gambia supported by the USAID Women Shellfishers and Food Security Activity has helped demonstrate how mangrove restoration and conservation can uniquely be supported under a fisheries co-management plan previously not foreseen in typical forestry co-management models. Reviews show that promoting diversified livelihood options such as oyster harvesting, fisheries, and aquaculture, non-timber forest products, ecotourism, and development of proximate landscape food portfolios can help mitigate mangrove degradation (Duguma et al., 2022; Crawford et al. 2022). Development of the new sustainable shellfisheries co-management plans in Narkwa (Ghana) and Bulock (The Gambia) involving mangrove conservation and restoration could benefit from multi-stakeholder approaches and engagements. In these contexts, and others, this approach offers unique opportunities to overcome local restoration and biodiversity management challenges. Diverse perspectives and expertise can be integrated into planning, collaborative implementation, and monitoring of often complex mangrove restoration work, and shared interests exist among stakeholders at different levels of community, government, NGOs, privates, research and academia, and international partners.

2.4.1.2 Mangrove Planting at Densu

Annual mangrove planting is one of the main activities for the Densu site ([DAA, 2024](#)). To equip DOPA members with the requisite knowledge and skills on this activity, DAA organized the second annual one-day training facilitated by three DOPA members with 40 DOPA participants (93% female) on November 22, 2023 at DFTC. Training objectives were: a) to train new participants on mangrove nursery establishment while refreshing the memories on previously trained participants, and b) to educate participants on the importance of mangroves in the environment and the need for restoration. Facilitators engaged participants in discussion on the importance of mangroves and their threats, conservation needs, and nursery establishment using photos from previous mangrove nursery activities. The practical component was in Tsokomey at the DAA/DOPA nursery site (Figure 29).

DAA/DOPA established a nursery with 7,813 mangrove propagules in November 2023. In January 2024, 6,962 nursery raised seedlings in addition to 1500 propagules sourced externally and not nursery raised (8,462 in total) were planted in an area of 18.8 hectares, for a total of 31.2 hectares planted with the support of the Women Shellfishers and Food Security Activity and adding to the 14.67 hectares planted in 2017 under the USAID SFMP project (Figures 30-32).



Figure 29: Practical sessions of mangroves training (left). DOPA member watering the mangrove nursery (right).



Figure 30: Transporting mangrove seedlings to the planting site. (January 2024).



Figure 31: Planting mangrove seedlings in the Densu.

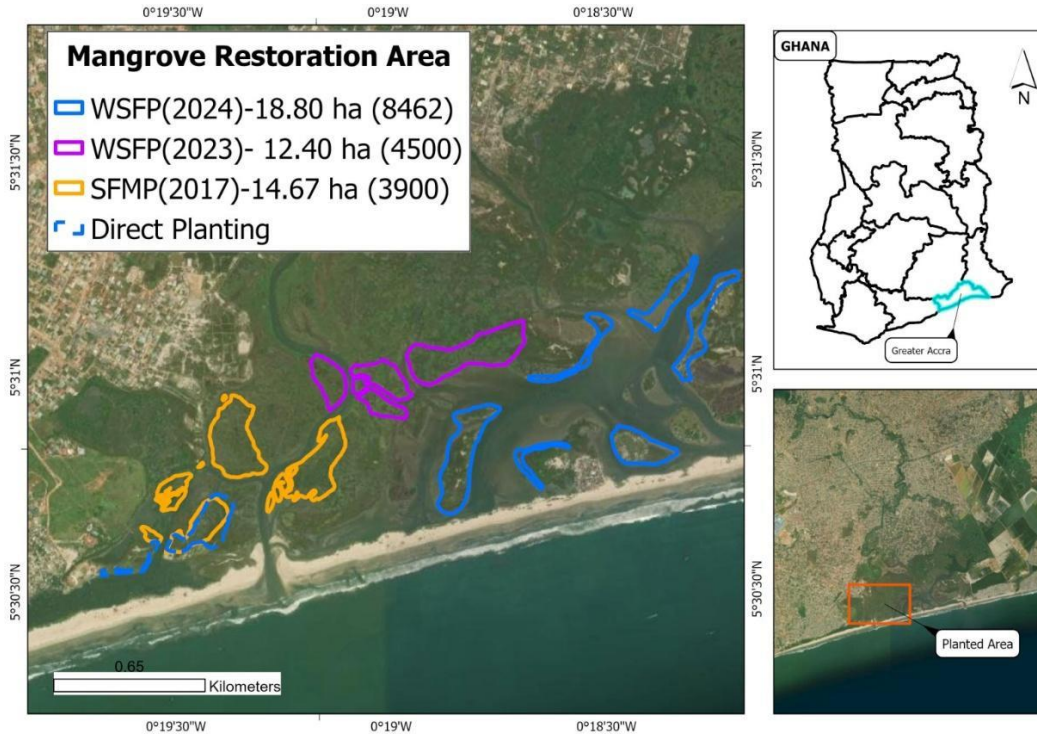


Figure 32: Mangrove restoration area for 2024 in blue outlines.

2.4.1.3 Monitoring Visit to Mangrove Planting Sites

The second annual field visit to mangrove planting sites at the Densu and a durbar was organized on September 10, 2024, to see how the planted mangroves were performing and to appreciate the role of DOPA in the restoration of mangroves in the Densu. A total of 138 participants from the Fisheries Commission, the Forestry Commission, traditional authorities, Ga South Municipal Assembly, ICRAF, UCC, DAA and DOPA were present.

The field visit created awareness for key stakeholders of the Densu Delta on the need to make a conscious effort to restore depleted mangroves and for stakeholders to collectively support the initiative in whatever ways possible. DAA gave a poster presentation of the different ages of replanted mangroves participants should expect to see in the field (Figure 33).

Participants were very impressed with the work DOPA had done, congratulated them on how well the mangroves were doing, encouraged them to keep up the good work, and appealed to donors for support to enable DOPA to do more. The representatives of the Forestry Commission and UCC suggested ring weeding around the 2023 and 2024 planted mangroves so that they can grow faster and healthier. UCC collected data on the heights of the mangroves of different ages for analysis (Figures 34 and 35).



Figure 33: The different ages of the mangrove planted 2024, 2023 (Women Shellfishers and Food Security Activity) and 2017(SFMP) respectively.



Figure 34: Participants on a field visit (September 2024) to observe results and discuss lessons learned from planted mangrove areas.



Figure 35: Naa Ashama Karley (left) and Forestry Commission Representative, Thomas Acquah (right) giving solidarity messages on behalf of the traditional authorities and the Forestry Commission respectively.

2.4.1.4 Training and Learning Session on Mangrove Restoration Best Practice in Densu

ICRAF, DAA and UCC also conducted a training workshop at DFTC during the September 10-11, 2024 period on best practices for mangrove restoration targeting different stakeholders including members of DOPA, the ‘Atidza’ wetland fishermen (brush park) fishers group from the communities of Tetegu, Bortianor, and Tsokomey, Traditional Authorities, the Wildlife Division of the Forestry Commission (Ramsar site management), the Zonal office of the Fisheries Commission, the University of Ghana, and CSIR-FORIG. The workshop involved 34 participants (25 females) with the following objectives: (i) review the adoption of best practices used in the establishment and management of planted/restored mangrove sites; (ii) discuss lessons, constraints, and opportunities encountered in mangrove restoration and management; (iii) address technical issues with shellfisher mangrove restoration activities, particularly site and stand management constraints after establishment at the Densu estuary, and redress measures following participant evaluation of their restoration activities; (iv) train shellfishers on long-term maintenance strategies and further expansion of the mangrove fields; (v) design and introduce shellfishers to simple ways to monitor and record survival rates of the planted and direct sown mangroves. Outcomes included identification, with participants, of specific technical issues and solutions (Table 6).

Table 6: Technical challenges affecting mangrove restoration and possible solutions.

Challenge	Proposed Solution
Uprooting of seedlings by fishermen	Increase community awareness through educational programs to emphasize the ecological importance of mangroves. This will encourage local fishermen to protect the seedlings, as the mangrove restoration directly supports fisheries and improves their livelihood.
Intense sunlight prolonging planting days	Schedule planting activities during cooler parts of the day, such as early mornings or late afternoons. Additionally, temporary shade can be provided for young seedlings to protect them from excessive sunlight.
Use of poor quality propagules	The propagule provider will be petitioned to ensure high-quality propagules are supplied, and better handling practices are followed during transportation to prevent damage during transit and promote better field survival rates. Propagule harvesting: It is advisable to allow the propagules to fall naturally. If propagules are harvested manually, particularly for white mangroves, the tip will turn yellow when they are ready. At this stage, a gentle touch will cause them to fall off on their own, indicating they are ripe for planting. This ensures that only mature and viable propagules are used in restoration efforts. Difficulty on Identifying healthy propagules: For red mangroves, pressing the propagules can help identify their health—if they ooze or feel soft, they are unhealthy. It's also important to ensure that the propagules have not been eaten by insects. For white mangroves, the health of propagules can be determined by their color—if there are two distinct colors, the propagules are likely unhealthy. Continued training on these techniques is essential to improve the group's ability to select viable propagules for planting.

Challenge	Proposed Solution
Lack of awareness and attention on mangrove restoration	Continue training and capacity-building initiatives to increase local knowledge and involvement. Early engagement of the community is crucial to boost their participation and commitment to long-term restoration efforts.
Weija dam water spillage	Following consultation with the Weija Dam authorities, an agreement has been reached to manage dam releases. The dam will now be opened gradually, with prior notice given to the community, minimizing the impact on restoration sites.
Plastic pollution	Organize regular site clean-ups to remove plastic waste. DOPA conducts clean-up activities every last Tuesday of the month to maintain site cleanliness. Installing wire gauze in gutters can also help filter plastics and prevent them from entering the mangrove areas.
Grass and weeds around planted areas	Regular weeding and site maintenance are necessary to prevent invasive grasses and other plants from competing with mangrove seedlings. This will ensure healthier growth and better restoration outcomes.
Fishing activities in restoration zones	Dialogue between the Atidza and DOPA is necessary to address the impact of fishing activities on mangrove restoration. Demarcating restored areas 'out of bound' for fishing activities and raising awareness through education will help safeguard restored sites and reduce the negative impact of fishing on mangroves.

2.4.2. Develop Mangrove Community Action Plans on Mangrove Restoration

ICRAF completed documentation on the Community Action Plans (CAPs) across four Activity sites in the December 2023 report entitled, “Developing Community Action Plans for Mangroves Co-Management in Ghana and The Gambia” ([Carson et al., 2023](#)). ICRAF also conducted follow up actions and consultations on the status of the CAPs through community meetings and workshops (Table 7). The purpose of the CAP is to help communities come up with a set of mangrove conservation and restoration actions aligned to their local situation, resources, problems, capacities, and needs. The goal is to help develop sustainable mangrove resource utilization, support shellfisheries, and achieve improved food systems. The CAP process has emerged as a useful approach to help communities better consolidate their interest and aspirations. Some lessons learned include:

- Mangrove restoration work could tap into the local knowledge (e.g. seasonality) and how it affects the planting dynamics—including knowledge from stakeholders within the mangrove spaces such as fisherfolks, and how they use mangrove diversity (e.g. white mangroves for fish traps and brush park fisheries).
- Complimentary activities involving home gardening and the creation of oyster and cockle farms could provide useful opportunities for more integrated systems that support food and income provisioning during the oyster harvesting closed season. Even though these engagements are time consuming, they are essential for the integrity of the plan and could improve welfare of women shellfishers, fishermen, and youth.
- Wider stakeholders can affect mangrove restoration work inadvertently and should be planned for (e.g. in Densu, Weija Dam management of water releases and communication).
- The role of traditional authorities such as chiefs on land allocation and land use remains strong, particularly in Narkwa which is experiencing rapid land use land cover changes.

Next steps in intervention sites include:

- Continued implementation of the identified work activities and development of partnerships that support each activity area, recognizing that partnerships may change as the plan is implemented.
- Periodic field visits to monitor performance, identify emerging issues encountered by the communities, and provide technical support.
- Strengthening knowledge and skills of women shellfishers and local nursery operators to produce indigenous tree planting materials for future initiatives.
- For those issues that have a large degree of support, the committee may wish to consider proposing a community-wide campaign within which the committee and/or other lead organizations would coordinate a series of interventions.

As a result of this activity, consensus on activity implementation is being achieved efficiently as Activity beneficiaries evaluate challenges and opportunities more closely.

Table 7: Summary of Community Consultations on Status of CAP Actions.

Ghana
Densu (September 10-11, 2024 with 34 participants)
<ul style="list-style-type: none"> • Implementation of the key actions on mangrove planting (including extent, survival, nurseries, and management), food portfolio efforts (such as planting, food recipes, and dissemination), and improvements in oyster and brush park fisheries is remarkable. • Communities surpassed mangrove planting targets and are optimistic this will yield environmental and economic benefits such as improved oyster production. • Challenges and solutions identified by communities in Table 6 above.
Narkwa (September 23 to 24, 2024 with 47 participants)
<ul style="list-style-type: none"> • Food and non-food tree demonstrations are successful with survival rates of at least 60% recorded on farms, community areas, and local schools, even poorly weeded plots. • Establishment of NOHA is helping enhance collective action and representation. • Most of NOHA's aspirations were not fully implemented due to lack of resources, absence of stakeholder engagements to drive initiatives such as mangrove planting, installation of regulations to protect mangroves, and acquisition of planting materials. • Closed and open seasons for shellfish harvesting still in the planning stages. • Concerns were voiced about the lack of engagement with key stakeholders and collaborators, such as local chiefs, elders, technical service providers, and NGOs identified as crucial to success.
The Gambia
Lamin (Follow-up consultation planned for October 2024)
<ul style="list-style-type: none"> • Mangrove restoration: Several initiatives were launched to plant mangroves in degraded areas. Further information is needed to know if mangrove restoration around Mandinary, where most of the cutting occurs, is happening. • Fisheries: Women shellfishers engage in sustainable oyster, cockle, and snail collection. • Food production/vegetable gardening: Many women shellfishers and community members engage in vegetable, rice, and maize production. Nursery production is on a limited scale, but in FY24 bamboo and a few indigenous species were planted at the landing site. • Oyster farming: 20 women shellfishers embarked on oyster farming under individual ownership.

Bulock (Follow-up consultation planned for October 2024)

- Mangrove restoration: The community established local by-laws enforced by the VDC to ensure mangroves within their jurisdiction are protected, and no cutting is allowed without prior approval. Mangrove planting is conducted annually. Protection of the mangrove areas allows natural regeneration to occur.
- Oyster farming: FAO FISH4ACP supports women shellfishers pilot oyster farming. Establishment of cold storage facilities, an identified ambition, has not yet been implemented due lack of financial support.
- Capacity development: Women shellfishers received training from ICRAF, TRY, FAO and other development partners to boost capacities in various domains.
- Tree planting: Indigenous tree species (food and timber) were planted at the shellfishery landing site, school, roadside, and homesteads.



Figure 36: Narkwa community members taking part in a CAP feedback session.

2.4.3. Review Mangrove and Forestry Co-management Plans in Ghana and The Gambia

Co-management reviews showed diverse ways that communities in Ghana and The Gambia, use and manage their forests - use rights and management responsibilities vary widely, depending on historical factors, social and political contexts, and national policies. Management of most forest reserves in Ghana is the exclusive right of state forestry departments. In The Gambia it is a mixture of state and community responsibilities. The report of the reviews provides information to partners on the need to identify major contexts and strategies on which communities are involved in forest management ([Carsan et al., 2024b](#)). Documenting past and current mangrove and forest co-management plans and associated efforts, their status, lessons learned, and recommendations raises stakeholder awareness, informs new management plans, and helps improve the existing ones.

In Ghana, key insights were made available on the general status and management regimes of forestry and mangrove resources, co-management policies and programs on collaborative approaches with communities. Governance systems for reservation, protection, and exploitation of forestry and mangrove resources were highlighted. Relevant policy documents include:

- Ghana Forest & Wildlife Policy (2012)
- Forestry Development Master Plan (2016-2036)
- Ghana Forest Plantation Development Strategy (2016-2040)
- The Wildlife Conservation Act of 1971 (Act 76)

- Fisheries Act of 2002 (Act 625)
- Collaborative Resource Management Strategy (2001)
- Collaborative Wildlife Management Policy (2004)
- National Wetland Management policy (1999)
- Wetland Management Regulation (1999)

In The Gambia, the review identified relevant documents (policies, strategies, reports and publications) and key informants such as the Ministry of Environment, Climate Change and Natural Resources (MECCNAR), Department of Forestry, Department of Parks and Wildlife Management, project staff, and community-based organizations involved at different tiers of forest resource management in the country. The following relevant documents were identified:

- National Forest Policy (2023 – 2032)
- Gambia Forest Management Concept (2001)
- National Forestry Strategy (2019-2028)
- National Forest Action Plan – NFAP (2019 – 2028)
- Forest Act (2018)
- Tanbi Wetland National Park Management Plan (2016)
- Kiang West National Park Management Plan
- National Adaptation Program of Action on Climate Change (2007)
- National Climate Change Policy (2016)

In summary, findings show:

- Efforts have progressed extensively to enact enabling policies and regulations in both Ghana and The Gambia even though more focus is on terrestrial forests and less on mangrove ecosystems often covered under wildlife and wetland policies.
- The promotion of the shellfisheries co-management in the Densu and Tanbi supported by the USAID Women Shellfishers and Food Security Activity provides a crucial case to demonstrate how mangrove restoration and conservation in Ghana and The Gambia can be supported by women-led shellfish work. Additional co-management plans for Narkwa (Ghana) and Bullock (Gambia) being developed will augment this work.
- Findings identified by this Activity align with policy aspirations to promote diversified livelihood options involving oyster harvesting, fisheries, and aquaculture, non-timber forest products, ecotourism, and development of adjacent landscape nutritional food portfolios.
- The review of national forestry co-management models such as Community Resource Management Area (CREMA) and Collaborative Forest Management (CFM) in Ghana, and Community Forestry (CF) in The Gambia, highlighted key elements relevant for women led shellfisheries co-management plans in Ghana and The Gambia. These include:
 - The need to be cognizant of tenurial security especially where land in mangrove areas is not legally owned
 - The need for clear benefit sharing mechanism structures among actors including chiefs with power to allocate land and oversee arbitration on encroachment disputes

- Appreciation of critical division of labor issues regarding access to resources among mangrove user groups in addition to women shellfishers
- Realization that broader co-management models could offer additional investment opportunities (e.g., several products supporting the various models)
- The review was not conclusive on whether community groups operating under national co-management models such as CREMA in Ghana have greater claims or dedicated state technical support compared to groups granted specific resource user rights such as DOPA and TRY.

2.5 Landscape Food Production Systems

2.5.1. Implement Portfolios Developed in Phase I

2.5.1.1 Establishment of food and non-food portfolio demonstration sites

ICRAF, in partnership with DAA, UCC, and TRY, have been engaged in implementing food portfolio activities (McMullin et al, 2023). These initiatives were carried out in Narkwa, Ghana, and in Lamin/Tanbi and Bullock, The Gambia as planned. Some activities were added for Densu in response to high demand despite the urban location and limited land area for planting. Within the landscape food system component of the Activity, four key areas of intervention were delivered:

- Community validation of food portfolios, demonstration farmers identified, and local assessments of available food and non-food tree planting material.
- Stakeholder training on adoption and dissemination of food and non-food portfolios - training and learning sessions on establishment, management, and harvesting, and intercropping of food trees and non-food crops on farmlands.
 - Technical training
 - Practical demonstrations
- Establishment of food and non-food portfolio demonstration sites, and community-led food and non-food tree species planting.
- Support to local nurseries for supplying quality tree planting material.

In Ghana, between May 14 and 29, 2024, ICRAF procured a total of 860 (600 coconut and 260 mango) seedlings for the Densu and Narkwa. In the Densu, 450 coconut and 200 mango seedlings were distributed among 200 shellfishers in three communities (60 in Bortianor, 100 in Tsokomey, and 40 in Tetegu) with support from DAA. The ICRAF team demonstrated methods of planting, assisted those who were ready to plant on their home compounds, and took initial data on height and diameter of the seedlings on planting, as well as GPS positions of planted locations (Figure 37). DOPA executives were also trained on establishment and monitoring of the seedlings.

In Narkwa, this year 150 coconut and 60 mango seedlings were used for planting three new plots and rehabilitating ten plots established in Narkwa in FY23 by replacing dead coconut and mango seedlings. The field conditions were also assessed, and the farmers advised to maintain their fields. Participants indicated that a sudden break in the rainfall pattern during May 2024 resulted in drought likely to reduce plant growth. They have discouraged thorough weeding to save the trees from

desiccation. However, some significant growth in individual plant stands one year after planting is observed in some locations (Figure 38).



Figure 37: Coconut and mango fruits growing in homesteads at the Densu.



Figure 38: Coconut and mango trees demo farms planted in FY23 in Narkwa, including strip weed control and mulching with crop residues practices.

Environmental constraints such as waterlogging, insufficient rains, and degraded soils were prominent issues, especially for tree planting efforts. Lack of available land for communal food plots, lack of inputs such seedlings; cutlasses, watering cans, hoes, and inadequate money to purchase seeds/seedlings to plant on their own were a significant challenge. Overall, installation of the food and non-food portfolios was successful. The main challenge was the initial land preparation to ensure fields were ready for planting, while heavy rain during the establishment period was also hazardous.

In The Gambia in FY24, ICRAF and TRY supported planting of 621 tree seedlings of 19 species (13 food). In Lamin communities, 51 trees were grown. In Bullock communities 570 trees were grown (Table 8). All the planting in Lamin took place at the landing site, while in Bullock it was mostly done at the landing site, homesteads, and at a local school. Tree planting work involved a total of 71 participants (of which 32 are women shellfishers in Bullock and 15 in Lamin). Local community bodies (women shellfishers, village development committee, youth, and school), Department of Forestry and TRY are involved in planting work.

Assessments have shown the average seedlings survival rate for all the ten species planted in FY23 in Bulock was 46 percent (Table 9). The highest seedling survival count was obtained with *Ceiba pentandra* (85 percent), followed by *Moringa oleifera* (70 percent) and *Khaya senegalensis* (64 percent). Species such as *ceiba* appears to grow faster than other species. Bamboo cuttings recorded zero survival, although they initially sprouted and gradually wilted. Species such as bamboo, mahogany, *ceiba*, and baobab were planted very close to the landing site, which appears to be high in salinity. High salt environments can greatly inhibit seedling growth and yield in salt-sensitive trees.

Table 8: Tree species and quantity planted in Bulock and Lamin in FY24.

Category	Species	Quantity planted	
		Lamin	Bulock
Timber	<i>Gmelina (Gmelina arborea)</i>	15	94
	Bamboo (<i>Bambusa vulgaris</i>)	30	42
	Rhum palm (<i>Borassus aethiopum</i>)	0	212
	Mahogany (<i>Khaya senegalensis</i>)	0	30
	<i>Ceiba (Ceiba pentandra)</i>	0	5
	<i>Azalia Africana</i>	0	10
Food	Cashew (<i>Anacardium occidentale</i>)	0	5
	Wild mango (<i>Cordyla pinata</i>)	0	34
	Moringa (<i>Moringa oleifera</i>)	6	13
	<i>Detarium senegalensis</i>	0	34
	Gingerbread plum (<i>Parinari macrophylla</i>)	0	8
	Mango (<i>Mangifera indica</i>)	0	43
	Soursop (<i>Annona muricata</i>)	0	4
	African locus bean (<i>Parkia biglobosa</i>)	0	3
	Madd fruit plant (<i>Saba senegalensis</i>)	0	1
	Baobab (<i>Adansonia digitata</i>)	0	18
	Grey plum (<i>Parinari excelsa</i>)	0	4
	Chinese date palm (<i>Ziziphus jujuba</i>)	0	6
	Pawpaw (<i>Carica papaya</i>)	0	4
All categories		51	570

Table 9: Tree species survival rates of FY23 plantings in Bulock.

No.	Local name	Botanical name	No. planted	No. surviving	% survival
Food trees					
1.	Duto	<i>Mangifera indica</i>	65	36	55.4
2.	Lemuno	<i>Citrus sinensis</i>	40	18	45.0
3.	Nyebedayo	<i>Moringa oleifera</i>	20	14	70.0
4.	Sunkungho	<i>Annona muricata</i>	20	11	55.0
5.	Sito	<i>Adansonia digitata</i>	25	9	36.0

No.	Local name	Botanical name	No. planted	No. surviving	% survival
6.	Talo	<i>Ditarium senegalense</i>	12	6	50.0
Non-food trees					
7.	Jalo	<i>Khaya senegalensis</i>	81	52	64.2
8.	Gmelina	<i>Gmelina arborea</i>	41	8	19.5
9.	Bantangho	<i>Ceiba pentandra</i>	40	34	85.0
10.	Bamboo	<i>Bambusa vulgaris</i>	61	0	0
Total	10	10	405	188	46.4

2.5.1.2 Training on home gardening techniques for diverse food supply

In Ghana, (Narkwa site) ICRAF supported integrating vegetables in home compounds for improved nutrition. The need for the cultivation of green leafy vegetables as food sources was reiterated with the potential of improving household diets. Also, women can easily grow leafy vegetables in home corners or backyards and even in containers. Participants in Narkwa accepted the concept of growing leafy vegetables and identified two species i.e. *alefu* (*Amaranthus* spp) and *bokoboko* or water leaf (*Talinum fruticosum*) for cultivation. They are willing to grow other suitable species for inclusion in diets (soups and stews) and possible sale on nearby markets if supported with seeds. In this regard, a range of indigenous green leafy vegetables that can be produced in coastal ecosystems were listed including: *gboma* (*Solanum macrocarpon*) and *ademe* (*Corchorus olitorius*) (Figure 39)



Figure 39: indigenous green leafy vegetables that can be produced in coastal ecosystems.

In The Gambia, two training workshops on tree nursery and vegetable garden production techniques were conducted in Bullock and Lamin on April 23 and June 13, 2024, respectively to build on the

recruitment work completed in FY23 (Figure 40). Training sessions included presentations, discussions, open question and answer sessions, and field demonstrations. In Bulock, 30 women shellfishers and one men were trained. In Lamin, 17 women shellfishers and three men were trained. The training is seeking to orient the women shellfishers to nurture tree growing and vegetable production techniques as part of efforts to help improve household nutrition, income and the surrounding ecosystem.

Training modules were theoretical and practical, starting with an introduction to landscape food system approaches for resilience by women shellfishing communities in The Gambia. The key steps involved in developing and establishing site-suitable nutritious food portfolios were highlighted. The lecture and discussion covered techniques of tree nursery and vegetable production including the infrastructure required, site and planting media preparation, sourcing quality planting materials, sowing, and seedling management. Participants divided into groups to discuss and identify appropriate planting time, prepare a tree nursery calendar, and identify the ideal time and location for seed collection around the local community. A practical demonstration of soil media preparation and sowing was also conducted.



Figure 40: Women shellfishers in training on vegetable home-gardening by Saikou Sanyang (Rtd) Agriculturist, Department of Agriculture.

2.5.1.3 Local food recipes preparation workshop in Lamin and Bulock

Training on various aspects of food and non-food portfolios also provided women shellfishers in Lamin and Bulock knowledge and practical skills on local food recipe preparation techniques. A workshop for 23 participants (22 female) in Lamin and 35 participants (32 female) in Bulock covered the preparation of healthy food such as oyster pie, baobab snack, moringa chips, leafy vegetable stew, smoked eggplant stew, moringa flour omelet, moringa salad, and mixed vegetable salad. The Director of Food Technology Services of The Gambia presented on the importance of food handling and safety (Figure 41).



Figure 41: Fatou Darboe, the Director of Food Technology Services at the Department of Agriculture talked about the importance of food hygiene (left): and a display of prepared local food recipes (right).

2.6 Objective 1 Challenges and Lessons Learned

2.6.1 Challenges

The Activity faced the following challenges in FY24:

- In Densu, flooding caused a shorter oyster picking period than expected affecting oyster landings and catch data for 2024.
- In Narkwa, short and irregular shellfish harvesting patterns hindered the collection of simple landings data.
- The seasons are becoming very unpredictable. Seasonality must be factored in when planning field ecology assessments at the mangrove sites for logistics and for results analysis.
- Delays by the Ekumfi District Assembly in registering NOHA resulted in a setback for the finalization of the co-management plan.
- Implementation challenges continued related to extension and outreach infrastructure and unresponsive state actors needed to reinforce various interventions of immediate interest by local communities but beyond Activity scope. An example is the Weija dam and District Assembly engagement to support mangrove restoration and conservation activities involving planting and conservation work around the Densu Delta Ramsar site in Ghana. In The Gambia, there is lack of coordination on mangrove restoration initiatives by government, NGOs, and communities contributing to lack of clarity on stakeholder engagement pathways.

2.6.2 Lessons Learned

The four strategic approaches, curated and applied as designed using the Toolkit and associated tools at the four Activity sites, appear to be both robust and flexible enough to accommodate the complexity of situations that arise across sites with differing socio-economic, political, and

environmental contexts. Integrating implementation of the approaches as required to inform the Objective 1 theory of change appears to be feasible and beneficial based on the FY23 and FY24 experience.

Stakeholder engagement challenges experienced in the site-based work highlight the relevance of the community-based co-management approach. Integrated implementation of the Activity's planned strategic approaches effectively identified the issues and promotes community-led solutions that provide pathways forward while advocating for government and other external support systems to provide needed services. For example:

- In the Densu, DAA/DOPA applied FY23 lessons learned. As a result, the mangrove nursery was started earlier to allow for planting in January/February 2024 to take advantage of the dry season. This facilitated planting lower along the riverbanks—a location that favors establishment of the mangrove seedlings before high water levels threaten their survival, and that better facilitates attachment of oyster spat. These adjustments worked well in FY24 and will be replicated subsequently.
- DOPA activities around the Densu have impacted other groups. In addition to the brush park fishermen who are exploring alternatives to cutting mangroves and engaging in mangrove planting following the DOPA example, the beach seine net fishermen also want to join DOPA so that they can advocate and save the beach. These fishermen do not currently have an association, but they appreciate the collaboration of DOPA and the brush park fishermen in their effort to improve the health of the Densu delta through mangrove planting for a sustained livelihood. They see how the inclusion of the brush park fishers by DAA/DOPA in stakeholder programs offers the brush park fishers an opportunity to make their voice heard.
- Peer-to-peer facilitation enhanced easy learning among group members.
- In The Gambia, collaboration and close coordination with the FAO FISH4ACP project resulted in synergy that enabled TRY to access resources needed to conduct outreach and engagement in ten additional communities when the Bulock shellfisheries co-management planning process revealed that harvesting and use patterns involved a much larger ecosystem (the Foni belongs) and many more communities than originally anticipated.

3. PROGRESS ON OBJECTIVE 2: West Africa Shellfish Knowledge and Outreach Hub

UCC had a strategic role in leading region-wide research and community engagement during the first two years of the Activity and has an intrinsic mandate and existing capacity to do so as a leading institution in West Africa (and in Africa) on coastal resource management. For these reasons, UCC is well placed to lead Objective 2, the knowledge management, dissemination, and support for the application of findings and best practices in the region on a sustainable basis with the contribution of Activity partners.

3.1 Establishment and Operationalization of the Shellfish Hub

As part of the scaling strategy for the shellfisheries co-management community of practice in West Africa, the West Africa Shellfish Knowledge and Outreach Hub (Shellfish Hub) was established and operationalized as a platform for promoting the development, sharing, and exchange of knowledge products, tools, and best practices needed to catalyze the scaling of shellfisheries co-management in the sub-region. The Shellfish Hub is hosted at the Centre for Coastal Management-Africa Centre of Excellence in Coastal Resilience at the University of Cape Coast. The operational framework of the Shellfish Hub is illustrated in Figure 42. Development of a web platform for the Shellfish Hub was completed and approved by USAID in FY24 at <https://westafricashellfishhub.ucc.edu.gh/>. The web platform (web interface at Figure 43) hosts and makes readily accessible all information gathered, particularly on the Women Shellfishers and Food Security Activity, as well as other relevant information on shellfisheries in West Africa. The page is regularly updated with shellfisheries stories, publications, and other knowledge information.

Establishing a West Africa Shellfish Network (WASNET) to connect stakeholders of shellfisheries within the sub-region is one of the key strategies for operationalization of the Shellfish Hub. A manual to guide WASNET operationalization was prepared in FY24, and advertisement for application for admission into the membership of the network was circulated. Twenty-six interested applicants have applied for membership to date, and next steps will involve official appointment of the applicants into membership of the network. A maiden virtual meeting and official launching of WASNET is scheduled for FY25.

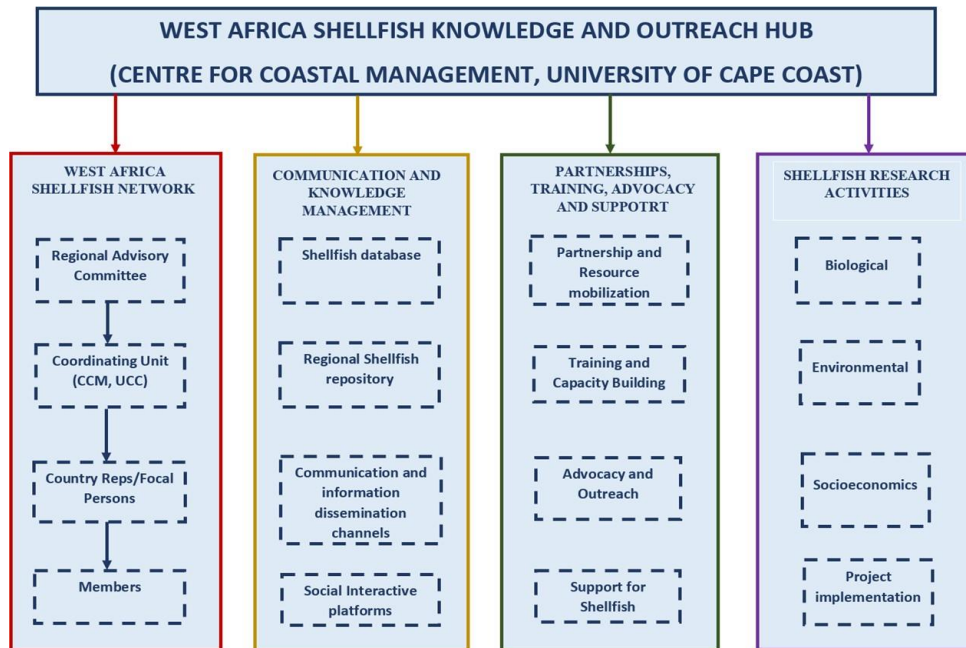


Figure 42: Organogram of the West Africa Shellfish Knowledge and Outreach Hub.

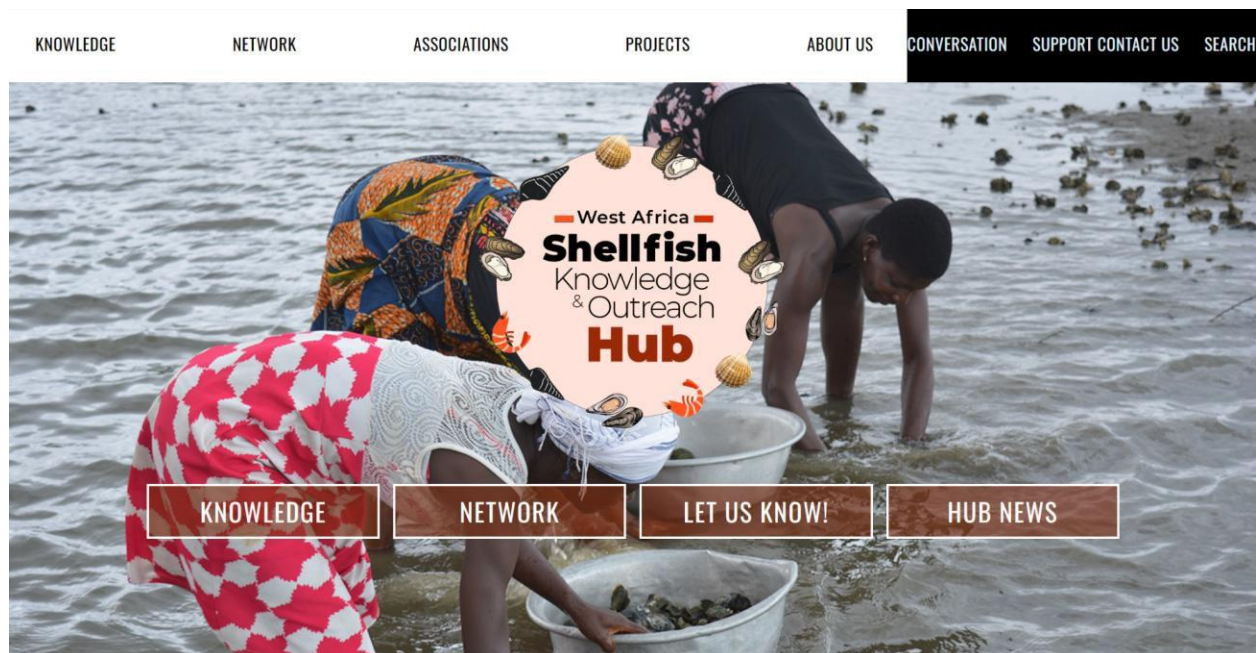


Figure 43: Snippet of the homepage of the West Africa Shellfish Knowledge and Outreach Hub.

3.2 Social Media

Various social media handles have also been created to facilitate the hub’s information dissemination as follows:

Twitter (X) = @wa_shellfishhub;

Facebook = West Africa Shellfish Hub (<https://web.facebook.com/profile.php?id=100094639621971>).

To date the “Reach” (the number of people who saw any content from the Page or about the Page) is 2,200 people, and “Impressions” (the number of times any content from the Page or about the Page entered a person’s screen) is 132, and “Follows” is 36.

LinkedIn = West Africa Shellfish Hub (<https://www.linkedin.com/showcase/west-africa-shellfish-hub/>).

To date “Impressions” is 570.

3.3 Toolkit Extension

In FY24, UCC led development of the shellfisheries co-management toolkit into two outreach materials in English and French with field testing and input from shellfishers in Ghana and The Gambia: 1) a simple illustrated guide with the thirteen co-management steps (Figure 44), 2) an animated audio-visual of the illustrated toolkit. These are available on the Shellfish Hub web platform at <https://westafricashellfishhub.ucc.edu.gh/videos>. The English version of the animated video was also shared with the FAO Fish4ACP project and West Africa Blue. In FY25, the English and French audio-visual versions of the toolkit will be developed into local language-translated versions covering one

local language commonly spoken by women shellfishers in each of the eleven Activity countries. Modalities for this will be discussed during the regional study tour in October 2024.



Figure 44: Snapshot of the newly developed toolkit outreach materials.

3.4 Peer to Peer Exchange Visits/Study Tours

Preparations for this activity began in FY24 and will be implemented in the first quarter of FY25. A concept note and program of activities for the West Africa Regional Shellfisheries Peer Exchange Study Tour were developed with input from Activity partners and USAID. UCC has made logistical arrangements and technical preparations for the program, which is scheduled to take place from October 28-31, 2024, at UCC in Cape Coast and the DFTC in Greater Accra, Ghana. Invitation letters were sent to participants and travel arrangements completed. Participants are primarily women shellfishers from The Gambia, Sierra Leone, Cote d'Ivoire, Ghana, Togo, Benin, and Nigeria.

3.5 Advocacy/Awareness Raising Targeting Regional Institutions

The Women Shellfishers and Food Security Activity partners led by UCC participated in the Third Biennial Conference on Fisheries and Coastal Environment (The Africa Blue Economy Conference), organized by UCC-CCM in Accra, Ghana on November 6-8, 2023. The Activity mounted a booth and presented on various project activities to showcase and disseminate approaches, results, and reports (Figure. 45). These included the West Africa regional assessment of women-led shellfisheries, mangrove restoration site mapping, and the landings data methodology, among others.

In March 2024, the two Activity leads from UCC (Isaac Okyere and Ernest Chuku) joined URI and its other project teams to participate in the 9th World Fisheries Congress in Seattle, Washington, organized by the World Council of Fisheries Societies (Figure 46). The Women Shellfishers and Food Security Activity team from UCC and URI contributed to a project dissemination and knowledge sharing session organized by URI on “*Tools, approaches, and best practices for scaling sustainable coastal fisheries management.*”. Lessons and best practices for scaling shellfisheries in West Africa were shared to provide insights for implementers of similar interventions in other regions. Lessons were learned from other panelists and participants on fisheries co-management interventions from Asia and other

regions. UCC also briefly highlighted the Women Shellfishers and Food Security Activity and its environmental benefits to the UNEP Abidjan Convention during a meeting at the Convention’s Secretariat in Cote d’Ivoire on an IUU fishing project. In FY25, UCC plans to hold an in-person meeting with the Abidjan Convention for incorporation of model shellfishing sites into the regional ecotourism program being developed by the Convention. The Convention was invited to participate in the regional shellfisheries study tour in Ghana.



Figure 45: Scenes from the Accra conference.



Figure 46: The URI session participants at the 9th World Fisheries Congress in Seattle.

3.6 Regional Webinar for Policymakers

This activity is planned for the second quarter of FY25, and UCC has begun preparations to implement the webinar. The women empowerment, gender sensitive co-management, and the regional Shellfish hub activities being carried out will feature prominently in the content of the webinar. The webinar will be discussed during the regional study tour as way of pre-informing stakeholders.

3.7 Coordination with Projects in the Sector

In FY24, the Activity continued quarterly coordination meetings with the FAO FISH4ACP project, implemented in Senegal and The Gambia. [West Africa Blue](#) initiatives implemented in Sierra Leone and Guinea on mangrove conservation for carbon credit and shellfisheries livelihoods in West Africa were identified and UCC contacted the team. A joint meeting on May 3, 2024 (Figure 47) indicated the potential synergies and collaboration opportunities. Key outcomes are that West Africa Blue has been supporting the organization of the annual Bonthe Oyster Festival for women Shellfishers in the Bonthe community in Sierra Leone, and shared featured stories on the 2024 festival for dissemination on the Shellfish Hub platforms. West Africa Blue has also included Women Shellfishers and Food Security partners on its news update platforms. The Women Shellfishers and Food Security Activity invited West Africa Blue to participate in the regional shellfish study tour. They will participate virtually, and the Women Shellfishers and Food Security Activity is funding the leader of the Bonthe Community Shellfishers Association to participate in person. The Women Shellfishers and Food Security Activity plans to participate in the Bonthe Oyster Festival in FY25 as part of the learning and exchange for the Shellfish Hub, during which there will also be dissemination of Activity outreach materials.

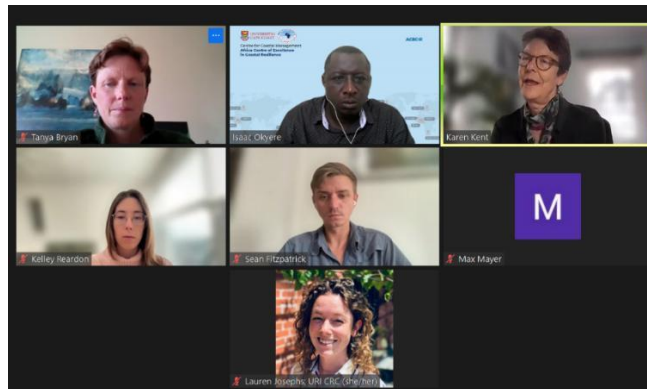


Figure 47: Snapshot of the meeting session between WSFS Activity team and the West Africa Blue team.

3.8 Document Linkages to Global Context

URI, in collaboration with Women Shellfishers and Food Security partners produced a report entitled, “West Africa Women-led Shellfisheries Co-Management in a Global Context: Case Studies From Africa, Asia, and South America” (Women Shellfishers and Food Security, 2024). The objective of this desk study was to examine links between West Africa women-led shellfisheries co-management

approaches, research and findings and other initiatives that address similar gender-based themes in coastal resource management around the globe in low- and middle-income countries. It highlights cases that explore links between women led shellfisheries co-management in estuarine mangrove ecosystems and biodiversity conservation, gender equity, climate change adaptation and mitigation, sustainable small-scale fisheries, and food security. The report's target audience is practitioners promoting management and conservation of estuarine shellfisheries and habitats for gendered livelihoods support.

In addition to The Gambia and Ghana, five cases from the Philippines, Ecuador, Brazil, Kenya, and Tunisia are highlighted with key takeaways for practitioners from each. Overarching key takeaways for practitioners based on the findings from the portfolio of cases are as follows:

A top-down, regulatory framework and evidence-based decision-making is likely not sufficient to incentivize the behavior change needed throughout the value chain for sustainable management of small-scale shellfisheries dominated by vulnerable women harvesters.

National policies or laws that promote co-management of mangroves and/or shellfisheries provide enabling conditions that can lead to widespread scaling of locally managed shellfish and mangrove areas. Such policies and laws, however, require governments to also commit resources for their implementation and to achieve widespread scaling.

A participatory, rights-based approach incentivizes the behavior change that is needed for responsible fisheries management and habitat stewardship. But a focus on and significant investment in local ecological knowledge, resource user empowerment, capacity building of resource user associations and government are critical—in addition to scientific knowledge and technical fisheries considerations.

Governance arrangements and management plans that require or facilitate strong links between resource user co-management entities and technical assistance, facilitate co-management success.

Socio-economically vulnerable actors (women) within economically vulnerable communities can participate in and lead natural resource co-management if priority needs and livelihood diversification options are integrated into co-management initiatives.

Exposure to co-management planning processes in different communities and geographies in a variety of fisheries enables stakeholders to understand the principles of the co-management approach more clearly—as distinguished from the specifics of a given community, geography, or fishery. This perspective builds capacity for adaptive management within co-management plans and for scaling the co-management approach.

Limited documentation and the infrequent and isolated nature of current cases of women-led rights-based shellfisheries co-management found in this study highlights the need to work towards a critical mass of adopters and generate a virtuous cycle of support for the approach.

3.9 Objective 2 Challenges and Lessons Learned

3.9.1 Challenges

Developing the toolkit audio-visuals in local languages is challenging because it requires the correct translation from English and French into the local language, including technical terms like co-management and others. For example, when translating “shellfisheries” there is a need to choose the correct terms to distinguish between shells, wild harvest or collection of shellfish, and shellfish aquaculture. The quality of voice for clarity and an agreeable tone are also important.

3.9.2 Lessons Learned

Continuous and active engagement of the country focal persons together with the shellfishers will lead to best outcomes. Shellfishers, country focal persons, and other stakeholders will therefore be deeply engaged during the regional study tour to map out the way forward for best outcomes during the final project year and sustainably into the future.

4. EXPECTED OUTCOMES AND INDICATORS OF ACHIEVEMENT

The expected Activity results and output and outcome indicators for FY24 have been achieved as detailed in the table below and the accompanying explanation of indicators.

Table 10: Performance Indicator Tracking Table.

Indicator	Base-line	Year 1 (FY 21)			Year 2 (FY22)			Year 3 (FY23)			Year 4 (FY24)			Year 5 (FY25)			Total LOA			Comments
		Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	
Number of research results documented and available (AFR/SD Custom Indicator STIR-I-UAF: Special Studies (Resources for Missions))	0	1	0	0%	6	18	300%	0			0			0			7	18	257%	1 Regional Assessment 10 Country Assessments 6 Technical Reports 1 Multivariate Report No longer reported
Research hypotheses or alternative findings are validated by research results.	0	0			Tracked	Done	100%	0			0			0			Tracked	Done	100%	7/19 relationships tested validated 1/19 relationships tested had limited validation 11/19 relationships tested not validated No longer reported
<i>Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance (EG. 10.2-2).</i>								0	N/A	N/A	0	N/A	N/A	3,600			3,600	N/A	N/A	Target revised from 7,352 at the end of FY23. Ecosystem category: 100% coastal marine. Conservation law category = illegal logging or IUU fishing.

Indicator	Base-line	Year 1 (FY 21)			Year 2 (FY22)			Year 3 (FY23)			Year 4 (FY24)			Year 5 (FY25)			Total LOA			Comments
		Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	
<i>Number of reports showcasing results and lessons learned (CUST).</i>								0	N/A	N/A	0	N/A	N/A	1			1	N/A	N/A	<i>Objective 1 Assessment of Site Based Results Report. URI Milestone 11</i>
Number of shellfish and mangrove stakeholders that: Have increased awareness of the basic TOC concepts, Have tools to design interventions to achieve TOC intended outcomes, Are networked regionally, Some identify plans or resources to pursue opportunities for scale up.	0	0			74	67	91%	0			0			0			74	67	91%	40% of 168 workshop participants from 11 countries No longer reported
Number of people trained in sustainable natural resources management and/or biodiversity conservation as a result of USG assistance (EG.10.2-4)	0	0	22 20 F 2 M	>100 %	74	168 77 F 91 M	227%	260	391 326 F 65 M	150%	272	391 350 F 41 M	144%	160			882	972 773 F 199 M	110%	<i>Phase II Objective 1 site-based work = 500 Phase II Objective 2 Regional Knowledge and Outreach Hub = 192 Revised LOA target = 190 actual Phase I + 692 Phase II</i>
Number of Toolkits produced	0				1	1	100%	0			0			0			1	1	100%	https://pdf.usaid.gov/pdf_docs/PA00ZH T6.pdf
Number of Dissemination Activities	0	0			17+	24	141%	0			0			0			17+	24	141%	-2 Virtual Regional workshops -8 conference/ session presentations

Indicator	Base-line	Year 1 (FY 21)			Year 2 (FY22)			Year 3 (FY23)			Year 4 (FY24)			Year 5 (FY25)			Total LOA			Comments
		Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	Target	Actual	% of target	
																				-3 peer reviewed journal papers. -10 on-line platforms. -1 set of 170 Toolkit hard copies No longer reported.
Number of institutions receiving capacity development support (AFR/SD Custom Indicator CBLD-9-UAF).	0	0			37	64	173%	0	2	>100%	5	6	120%	5			47	66	140%	Phase I 10 Resource user 19 Government 23 Academic/research 12 NGO/other <i>Phase II = 10 (Objective 1 =4; Objective 2 =6)</i>
Number of host country higher education institutions receiving capacity development support with USG assistance (AFR/SD Custom Indicator ES.2-1)	0	0			11	14	127%	1	1	100%	1	1	100%	1			11	14	127%	From 9 of the 11 West Africa countries. <i>Phase II = UCC (not cumulative)</i>

Note: The five indicators not shaded are those to be reported in Phase II (Years 3-5).

Explanation of Indicators

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

The Activity did not plan to and is not reporting on achievements under this indicator in FY24. The focus of the site-based activities is to demonstrate the effects of an integrated package of strategic approaches on ecosystem management in selected limited geographical areas. In FY25, integrated implementation over time will provide a more comprehensive assessment of these effects. Progress to date includes an oyster landings data methodology, data collection, and analysis implemented in Densu, Lamin, and Bullock (approximately 3,200 ha), and a total of 31.2 ha of mangrove planted within some of those hectares in Densu in FY23 and FY24. As noted in the FY23 Annual Report, the Activity team reviewed and revised the anticipated target for FY25 and LOA following community consultation and assessments in the field. Estimated target hectares are as follows, based on mapping of the approximate Activity intervention areas in figures 4 and 6 of Carson et al., 2023 (https://pdf.usaid.gov/pdf_docs/PA0214GR.pdf):

Table 11: FY25 and LOA Targets for USAID Standard Indicator EG.10.2-2.

Site Name	Country	Total hectares Target for FY25 and LOA	Ecosystem category: -Terrestrial-freshwater - Coastal-marine	Conservation law compliance category -Wildlife trafficking -Illegal logging and associated trade -IUU fishing	Rationale for “biological significance” of the area
Densu	Ghana	500	Coastal Marine	50 = Illegal logging and associated trade 500 = IUU fishing	Ramsar site
Narkwa	Ghana	400	Coastal Marine	400 = IUU fishing	Coastal Lagoon and mangrove wetland part of the Guinea Current Large Marine Ecosystem (LME)
Lamin	The Gambia	1,300	Coastal Marine	300 = Illegal logging and associated trade 1,300 = IUU fishing	In the Tanbi Wetlands National Park, a RAMSAR site.
Bulock	The Gambia	1,400	Coastal Marine	400 = Illegal logging and associated trade 1,400 = IUU fishing	Gambia River mangrove wetland linked to the Canary Current LME
Total		3,600		750 = Illegal logging and associated trade 3,600 = IUU fishing	

Number of people trained in sustainable natural resources management and/or biodiversity conservation as a result of USG assistance (EG.10.2-4):

The total number of people trained under this indicator for FY24 is shown in Table 20, where it is also disaggregated by sex, conservation law compliance category, and stakeholder group. Per the direction of the PIRS for this indicator, numbers reported in Table 20 exclude duplicate trainees (i.e., individuals who attended multiple trainings in FY24 are only counted once).

Deviation Narrative: The Year 4 (FY24) target for this indicator (EG.10.2-4) was 272 people, while the actual number achieved in FY24 was 144% of this target (391 people). The deviation can be explained by higher than anticipated interest in Activity trainings in general across targeted communities in Ghana and The Gambia. There was higher than anticipated participation in trainings by local leadership (Village Development Committee members, Village Chiefs, etc.) in The Gambia, and the need was identified in FY23 to expand the Bullock shellfish co-management planning process to include a larger connected ecosystem (the Foni Bolongs) and additional shellfisher communities. The Activity coordinated with the FAO FISH4ACP project that provided some additional resources to TRY for the expanded outreach.

Table 12: Summary for USAID Standard Indicator EG.10.2-4 for FY24, excluding duplicate trainees.

FY24 Annual Summary Number of people trained	Total	391		
	Male: 41	Female: 350		
	Logging: 66	IUU: 88	Other: 237	
	Resource User: 367	Govt.: 7	Academia: 5	Other: 12

Although duplicate trainees are excluded from the annual summary, it is worthwhile – due to the integrated nature of Activity strategic approaches – to note that many people attended multiple Activity trainings in FY24, with 62 people attending four or more training events over the year (Figure 49). This also represents the Activity approach to provide stakeholders with depth of capacity on multiple themes.

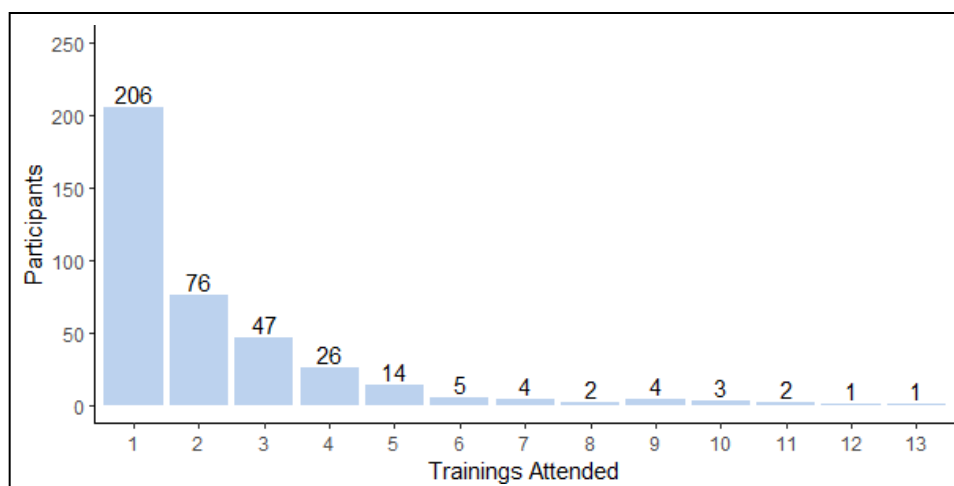


Figure 48: The number of participants attending multiple Activity trainings in FY24, broken down by the number of trainings attended (e.g., 206 participants attended only one training, while one participant attended 13 of the 27 total trainings conducted in FY24).

Table 13: Complete list of training events conducted under the Activity in FY24, including total participants attending, broken down by implementing Partner host, and disaggregated by sex.

	Subject	Dates	Location	No.	M	F
DAA						
1	Mangrove Establishment	November 10, 2023	DFTC, Kokrobrite-Accra, Ghana	40	3	37
2	Literacy and Numeracy Training	January-September, 2024	Bortianor, Ghana	28	0	15
3	Leadership And Advocacy Training	March 19, 2024	DFTC, Kokrobrite-Accra, Ghana	32	1	31
4	Training of trainers: Literacy and Numeracy Facilitators	March 20, 2024	DFTC, Kokrobrite-Accra, Ghana	5	2	3
UCC						
5	Orientation on Numeracy and Literacy Training	June 18, 2024	Ekumfi Narkwa Community Centre, Ghana	46	3	43

	Subject	Dates	Location	No.	M	F
6	Village Saving and Loan Associations	June 19, 2024	Ekumfi Narkwa Community Centre, Ghana	46	3	43
7	Mangrove and Oyster Reef Restoration	June 20, 2024	Narkwa Lagoon, Ghana	46	3	43
ICRAF						
8	Local Food Recipes: Bulock	March 28, 2024	Bulock Nursery School, Bulock, The Gambia	35	3	32
9	Vegetable and tree nursery techniques: Bulock	April 23, 2024	Bulock Nursery School, Bulock, The Gambia	31	1	30
10	Food and Non-food Tree Portfolios: Nakwa & Densu	May 14, 29, 2024	Ekumfi-Narkwa & Densu, Ghana	90	14	76
11	Local Food Recipes: Lamin	May 26, 2024	TRY Office, Old Jeshwang, The Gambia	23	1	22
12	Vegetable and tree nursery techniques: Lamin	June 13, 2024	Lamin Lodge, Lamin, The Gambia	20	3	17
13	Best Practices for Mangrove Restoration for Densu Shellfishers	September 10-11, 2024	DFTC, Kokrobite-Accra, Ghana	34	9	25
14	Community Action Plans Review, Food & Non-food Portfolio Adoption	September 23-24, 2024	Ekumfi-Narkwa, Ghana	47	4	43
TRY						
15	Review #1 on Draft Co-management Plan	November 29, 2023	Bulock, The Gambia	21	3	18
16	Review #2 on Draft Co-management Plan	December 10, 2023	Bulock, The Gambia	24	0	24
17	Review #3 on Draft Co-management Plan	January 6, 2024	Bulock, The Gambia	17	0	17

	Subject	Dates	Location	No.	M	F
18	Review #4 on Draft Co-management Plan	February 11, 2024	Bulock, The Gambia	30	1	29
19	Review #5 on Draft Co-management Plan	March 3, 2024	Bulock, The Gambia	30	1	29
20	Review #6 on Draft Co-management Plan	April 14, 2024	Bulock, The Gambia	30	1	29
21	Review #7 on Draft Co-management Plan	May 26, 2024	Bulock, The Gambia	29	0	29
22	Review #8 on Draft Co-management Plan	June 9, 2024	Bulock, The Gambia	30	1	29
23	Cockle Ranching	June 20, 2024	Lamin, The Gambia	24	0	24
24	Review #9 on Draft Co-management Plan	July 14, 2024	Bulock, The Gambia	30	1	29
25	Leadership Training: Bulock	August 14, 2024	Bulock, The Gambia	30	0	30
26	Leadership Training: Lamin	August 16, 2024	Lamin, The Gambia	29	0	29
27	Review #10 on Draft Co-management Plan	September 21, 2024	Bulock, The Gambia	26	0	26

Number of institutions receiving capacity development support (AFR/SD Custom Indicator CBLD-9-UAF).

The FY 24 target of five for this indicator was 120% achieved as the six organizations listed in Table 23 received capacity development support. The Foni Bolongs Oyster and Cockle Co-Management Committee and the Narkwa Oyster Harvester's Association (NOHA) are new. The other three are continuing as organizations already counted in FY22 and FY23 but receiving new capacity development support this year.

Deviation Narrative: Planning did not anticipate the formal establishment of both of the new shellfish co-management entities during this fiscal year. Development Action Association is also included as a continuing recipient of capacity development support and was not anticipated in the planning.

Table 14: Organizations receiving capacity development support.

No.	Name of Organization	Type of organization*		Support received
		Tier 1	Tier 2	
1	University of Cape Coast, Center for Coastal Management	Academia	Ghana and International Africa	Technical and financial support to establish and host the West Africa Shellfish Knowledge and Outreach Hub community of practice website and associated social media at https://westafricashellfishhub.ucc.edu.gh/
2.	TRY Oyster Women's Association	Resource User	The Gambia	Technical and financial support to lead the Bullock/Foni shellfishery co-management planning process TRY members at Lamin received training in leadership and advocacy from TRY leadership, and in vegetable, and local food recipes and tree nursery techniques: from ICRAF. UCC provided technical support for landings data analysis.
3.	Foni Bolongs Oyster and Cockle Co-Management Committee (new)	Resource User	The Gambia	With the support of TRY, the committee was established and participated in multiple co-management planning workshop sessions in FY24. Members received training in leadership and advocacy from TRY, and in vegetable and local food recipes and tree nursery techniques: from ICRAF. UCC provided technical support for landings data analysis.
4.	Densu Oyster Picker's Association	Resource User	Ghana	DAA provided training in leadership and advocacy, literacy and numeracy, and mangrove establishment. UCC provided technical support for landings data analysis. ICRAF provided training in best practices for mangrove restoration
5.	Narkwa Oyster Harvester's Association (new)	Resource User	Ghana	With the support of UCC, the Association was established and received training in literacy and numeracy, VSLA, and mangrove and oyster reef establishment.

No.	Name of Organization	Type of organization*		Support received
		Tier 1	Tier 2	
				ICRAF provided training in CAP review and food and non-food portfolio adoption.
6.	Development Action Association	NGO	Ghana	Technical and financial support to lead the capacity strengthening of DOPA for mangrove nursery management and mangrove replanting, oyster landings data collection and analysis, and optimization of the shell value chain.

* Type of organization:

Tier 1. Resource user; Academia; Government; NGO

Tier 2. National [enter country name]; WA Regional; International

Number of host country higher education institutions receiving capacity development support with USG assistance (AFR/SD Custom Indicator ES.2-1)

In FY24, The University of Cape Coast, Center for Coastal Management received technical and financial support from URI to establish and host the West Africa Shellfish Knowledge and Outreach Hub community of practice website and associated social media at <https://westafricashellfishhub.ucc.edu.gh/>. UCC also benefitted from the USAID website approval process that included implementing technical standards for making content accessible to users with disabilities. This support provided UCC with the capacity to execute its leadership role in support of shellfisheries co-management in West Africa effectively and sustainably. UCC is continuing as an organization already counted in FY23 but receiving new capacity development support this year.

Table 15: Universities reported in FY24.

No.	Name of Organization	Country	Type of organization*	
			Public	Private
I.	University of Cape Coast, Center for Coastal Management	Ghana	X	

REFERENCES

- Adu-Afarwuah, S., Kyei-Arthur, F., Ali, Z. and Oaks, B. M. (2022). Dietary Intakes, Food Security, and Anemia Prevalence among Women Shellfishers in Selected Estuary Sites in Ghana and The Gambia. Technical Report of Findings on Activity 2e and contributions to Activity 2d. University of Ghana Department of Nutrition, University of Rhode Island Department of Nutrition and Food Science and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 56 pp. https://pdf.usaid.gov/pdf_docs/PA00ZMNC.pdf
- Adu-Afarwuah, S., Taabia, F. Z., Kyei-Arthur, F., Ohemeng, A. N., and Oaks, B. M. (2023). Brief Report: Role of Oysters in Enhancing Mineral Intakes of Women Shellfishers in Ghana. University of Ghana Department of Nutrition, University of Rhode Island Department of Nutrition and Food Science. University of Ghana, Accra, Ghana. 7 pp.
- Carsan, S., Obiri, D.B., Bah, A., Muthee, K. and McMullin, S. (2024). Multi-stakeholder review of mangrove restoration initiatives to improve biodiversity in Ghana and The Gambia. World Agroforestry (ICRAF), Nairobi, Kenya and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 43 pp. https://pdf.usaid.gov/pdf_docs/PA021XBK.pdf
- Carsan, S., Obiri, B., Bah, A., Muthee, K., Oduro, K., Asamoah, A., Andoh, J., Guuroh, R. (2024b). A review of mangrove and forestry co-management in Ghana and The Gambia. World Agroforestry (ICRAF), Nairobi, Kenya and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 69 pp. https://pdf.usaid.gov/pdf_docs/PA021XBH.pdf
- Carsan, S., Darko Obiri, B., Bah, A., McMullin, S., Muthee, K. (2023). Developing Community Action Plans for Mangroves Co-Management in Ghana and The Gambia. World Agroforestry (ICRAF), Nairobi, Kenya and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 60 pp. https://pdf.usaid.gov/pdf_docs/PA021KMX.pdf
- Carsan, S., Harou, I., Muthee, K., Bah, A., McMullin, S., Darko Obiri, B., Minang, P. (2023b). Mangrove Restoration and Conservation Sites Mapping in Ghana and The Gambia. USAID Women Shellfishers and Food Security Project. World Agroforestry (ICRAF), Nairobi, Kenya and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 35 pp. https://pdf.usaid.gov/pdf_docs/PA0214GR.pdf
- Carsan, S., McMullin, S., Obiri, B., Duguma, L., Guuroh, R., Bah, A., Orero, L., Muthee, K. (2022). Land-Seascape Food and Nutrition Profiles. USAID Women Shellfishers and Food Security Project. World Agroforestry (ICRAF), Kenya and Forestry Research Institute Ghana. 78 pp. WSFS2022_04_CRC.

- Chuku, E. O., Okyere, I., Adotey, J., Abrokwah, S, Effah, E., Adade, R., Aheto D. W. (2022). Site-Based Assessment of Oyster Shellfisheries and Associated Bio-Physical Conditions in Ghana and The Gambia. USAID Women Shellfishers and Food Security Project. Centre for Coastal Management (Africa Centre of Excellence in Coastal Resilience), University of Cape Coast, Ghana. https://www.crc.uri.edu/download/WSFS2022_05_CRC_FIN508.pdf WSFS2022_05_CRC.
- Crawford, B., Adu-Afarwuah, S., Oaks, B., Kyei-Arthur, F., Chuku, E. O., Okyere, I., D., L., Carsan, S., McMullin, S., Muthee, K., Bah, A., Orero, L., Janha, F., Arnold, C. D., Kent, K., (2022). Multivariate analysis of the theory of change model. Women Shellfishers and Food Security Project, Centre for Coastal Management, University of Cape Coast; World Agroforestry; Department of Nutrition and Food Science, University of Ghana; Department of Nutrition and Food Science and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 48 pp. https://www.crc.uri.edu/download/WSFS2022_10_CRC_FIN508.pdf
- CRC (2022). Monitoring and Evaluation Plan for Site Based Activities in Furtherance of the Research Agenda. Centre for Coastal Management, University of Cape Coast; World Agroforestry; and Coastal Resources Center, University of Rhode Island. Narragansett, RI, USA. 48 pp. https://pdf.usaid.gov/pdf_docs/PA00ZW58.pdf
- DAA (2024). Progress and Results of Mangrove Replanting in Year I and Year in the Densu Estuary, Ghana (DAA Extension Milestone #6). Development Action Association, Ghana. 16 pp. https://pdf.usaid.gov/pdf_docs/PA021WXB.pdf
- Duguma, L., Bah, A., Muthee, K., Carsan, S., McMullin, S., Minang, P. (2022). Drivers and Threats Affecting Mangrove Forest Dynamics in Ghana and The Gambia. Women Shellfishers and Food Security Project. World Agroforestry (ICRAF), Nairobi, Kenya and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. WSFS2022_01_CRC. 53 pp. https://www.crc.uri.edu/download/WSFS2022_01_CRC_FIN508.pdf
- McMullin, S., Muthee, K., Carsan, S., Bah, A., Darko Obiri, B., Minang, P. (2023). Progress report on developing food portfolio plans for women shellfishers in Ghana and The Gambia. World Agroforestry (ICRAF), Nairobi, Kenya and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 30 pp.
- Okyere, I., Chuku, E. O., Taale, F., Nunoo, J. Krampah, E. A., Clottey, M. N. K., Adade, R., Ahenkorah, V., Agboli, N. A., Osei, I. K., Dzantor, S. A., Gyimah, C. A., Kent, K., Josephs, L., Crawford, B., and Aheto, D. W., (2024). Value Chain and Economic Analysis of the Shell By-Product of Bivalve Fisheries in Ghana and The Gambia: An Assessment of Oyster, Cockle, and Clam Shells. USAID Women Shellfishers and Food Security Project. University of Cape Coast, Center for Coastal

- Management, Cape Coast, Ghana, Development Action Association (DAA), Accra, Ghana, TRY Oyster Women's Association, Old Jeshwang, The Gambia, and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 70 pp.
- SFMP (2019). Training Manual on Women Empowerment, Access to Finance and Sustainable Fisheries. 27 pp.
- TRY (2024). Report on Establishment of Oyster Aquaculture in Lamin (TRY Extension Milestone #7). TRY Oyster Women's Association, The Gambia. 15 pp. https://pdf.usaid.gov/pdf_docs/PA021WX5.pdf.
- USAID. (2022). Fixed Amount Award No. 7200AA20FA0003 I, under BAA-AFR-SD-2020 Amendment # P004, Titled "Women Shellfishers and Food Security Activity." 66 pp.
- USAID (2020). Fixed Amount Award No. 7200AA20FA0003 I, under BAA-AFR-SD-2020 Addendum 01, Titled "Women Shellfishers and Food Security Activity." Attachment 2, Program Description. 32 pp.
- Women Shellfishers and Food Security Project (2022). Revised Three Year Extension Implementation Plan and Monitoring Evaluation and Learning Plan. University of Cape Coast, World Agroforestry (ICRAF), TRY Oyster Women's Association, Development Action Association, and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 59p. https://pdf.usaid.gov/pdf_docs/PA00ZW57.pdf
- Women Shellfishers and Food Security (2024). West Africa Women-led Shellfisheries Co-Management in a Global Context: Case Studies From Africa, Asia, and South America. University of Cape Coast, World Agroforestry (ICRAF), TRY Oyster Women's Association, Development Action Association, and Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. Narragansett, RI, USA. 71 pp.
- Women Shellfishers and Food Security Project (2023). Methodology on Simple Landings and Income Data Systems for Oysters (Working document).
- Women Shellfishers and Food Security Project (2023b)., Methodology on Simple Landings and Income Data Systems for Oysters: FIELD GUIDE (Working document).
- Women Shellfishers and Food Security Project. (2022). Empowering Women for Shellfish Management, Food Security and Biodiversity Conservation in Estuarine Ecosystems of West Africa. USAID Women Shellfishers and Food Security Project. Centre for Coastal Management, University of Cape Coast, Ghana and Coastal Resources Center, Graduate School of

Oceanography, University of Rhode Island. Narragansett, RI, USA. 69 pp.
https://pdf.usaid.gov/pdf_docs/PA00ZHT6.pdf

APPENDIX I: Baseline Data Table

As per the monitoring and evaluation plan for Activity Objective I, available FY24 data was documented in Table 16.

Table 16: Baseline data collection and other related activities.

Type of Data/Activities	Year		
	2023	2024	2025
Mangroves			
Number of mangrove seedlings planted per year (Densu only)	4,500	8,462	x
Hectares under mangrove planting and/or management (conservation) (Densu only)	12.4	18.8	x
Hectarage of the overall area of Activity influence in the first year (boundaries mapping)	3,600		
Percent of mangrove cover change - baseline to endline	2021 report as baseline		x
Annual survival rate		x	x
Hectarage under sustainable mangroves harvesting	0	45.87	x
Shellfishery			
Catch per unit of effort ¹	See Appendix 2	App. 2	x
Biodiversity and shellfish recruitment in replanted areas (Densu only)**		See 2024 Bio-diversity Report	x
Stakeholder empowerment* (Stakeholder Empowerment Score; SES) (see Section 2.6.1.)	Ghana: 8.03 ±2.40 Gambia: 9.81 ±2.20		x
Household food production systems** (Household Food Diversity Score)	Ghana: 1.97 ±1.16 Gambia: 2.79 ±1.55		x
Human well being			
Socioeconomics - Individual/household survey **,**	See Tables 14-16 in Annual Report		x
Knowledge, Attitudes and Practice (KAP) of resource users – individual** (KAP Score)	Ghana: 18.04 ±3.80 Gambia: 18.87 ±3.49		x
Nutrition (MDD-W of WRA) individual*	Adu-Afarwuah et al. 2022 as baseline		x

* - collected in Phase I, ** - new variables to be collected in Phase II, **, - includes both some old and new variables., ¹ - new method of collection in Phase II.

APPENDIX 2: Summary of Priority Approaches Implementation Across Sites

Table 17: Outputs by Strategic Approach and Site.

Women shellfishers empowerment	Gender sensitive shellfish co-mgt.	Mangrove co-mgt.	Landscape food systems
Densu, Ghana			
<ul style="list-style-type: none"> Leadership and advocacy: 30 (FY23) and 32 (FY24) shellfishers trained (80% and 97% female) VSLAs: 3 established totaling 74 shellfishers (FY23) and 6 strengthened (FY24) Literacy and numeracy: TOT for 7 facilitators - 58 shellfishers trained (97% female) (FY23). TOT for 5 facilitators - 48 shellfishers trained (98% female) (FY24) Shell value chain study tour (FY23) and study (FY24) 	<ul style="list-style-type: none"> 6th and 7th annual closed seasons of 5 months observed in FY23 and 24 Landings methodology piloted/data recorded: 103 MT (FY23) and 24 MT (FY24) Shells restocked for reef restoration in FY23 and 112.4 kg in FY24 Shellfish biodiversity study in replanted areas completed (FY24) 	<ul style="list-style-type: none"> Participatory LULC and future potential land use mapped (FY23) Multi-stakeholder Review of Local Mangrove Restoration Initiatives, Opportunities, and Challenges on Improving Biodiversity 31 participants (48% female)(FY23/4) Mangrove Restoration Best Practice training: 41 trained (FY23) Mangrove nursery establishment: 40 DOPA members (85% female) (FY23) and 40 (93% female) (FY24) trained Mangrove planting: 12.4 ha (4500 seedlings) (FY23) by 143 DOPA members and 18.8 ha (8,462 seedlings) (FY24) Annual “durbar” field visit to assess planted mangroves 159 participants (FY23) and 138 (FY24) Mangrove Community Action Plan (CAP) developed: 24 participants (79% female) (FY23) CAP review: 34 participants (74% female) (FY24) 	<ul style="list-style-type: none"> Adoption and Dissemination of Food Portfolios (FY23/4) Fruit tree seedlings planted: 650 by 200 shellfishers at households (FY24)

Women shellfishers empowerment	Gender sensitive shellfish co-mgt.	Mangrove co-mgt.	Landscape food systems
Narkwa, Ghana			
<ul style="list-style-type: none"> • Narkwa Oyster Harvesters Association (NOHA) legally registered (FY24) • Peer to peer study tour to Densu on co-management and water quality testing 21 NOHA members (FY23) • Water quality testing instruments provided (FY23) • Oyster biology, water quality monitoring, mangrove nursery management and replanting, shell restocking, and simple landings data collection: 43 NOHA trained (FY24) • Leadership and advocacy: 21 (FY23) and 43 (FY24) shellfishers trained • VSLA: 43 NOHA members trained (FY24) • Literacy and numeracy: 43 NOHA members orientation (FY24) • TRY The Gambia donated 50 gloves (FY24) • Shell Value chain study (FY24) 	<ul style="list-style-type: none"> • New co-management planning process at step 4 (FY23) and step 9 (FY24) of 13 steps. 	<ul style="list-style-type: none"> • Participatory LULC and future potential land use mapped (FY23) • Mangrove CAP developed: 28 participants (93% female) (FY23) • CAP review: 47 participants (91% female) (FY24) 	<ul style="list-style-type: none"> • Adoption and Dissemination of Food Portfolios (FY23/4) • 22 (18 women and 4 men) demonstration gardens planted. 15 farm plots (13 food crop-tree crop, 2 non-food) and 7 at households (FY23) • 1150 tree seedlings planted (57% food trees) plus 53kg maize seeds. Trees had 90% survival after 1 month (FY23). 210 new and replacement tree seedlings planted (FY24) • Home gardening integration (FY24)

Women shellfishers empowerment	Gender sensitive shellfish co-mgt.	Mangrove co-mgt.	Landscape food systems
Lamin/Tanbi, The Gambia			
<ul style="list-style-type: none"> Leadership and advocacy 29 (FY23) and 23 (FY24) women shellfishers trained Peer to peer study tour to Senegal (TRY Director, 1 Lamin and 2 Bullock shellfishers) (FY24) Shell Value Chain Study(FY24) 	<ul style="list-style-type: none"> Landings data methodology piloted/ data recorded: 80 MT (FY23) and 99 MT (FY24) Oyster aquaculture farms: 20 established (FY23/4). Cockles transplanted to re-establish depleted stock from overfishing: 29 women shellfishers trained and 0.11 ha seeded (FY24) 	<ul style="list-style-type: none"> Participatory LULC and future potential land use mapped (FY23) Multi-stakeholder Review of Local Mangrove Restoration Initiatives, Opportunities, and Challenges on Improving Biodiversity 28 participants (39% female) (FY23/4) Mangrove CAP developed: 22 participants (77% female) (FY23) 	<ul style="list-style-type: none"> Adoption and Dissemination of Food Portfolios (FY23/4) Fruit trees planted: 51 (FY24) Food recipes: 23 (1 male) trained (FY24) Home gardening: 20 (3 male) trained (FY24)
Bullock, The Gambia			
<ul style="list-style-type: none"> Peer to peer study tour to Lamin on co-management (FY23) Leadership and advocacy 27 shellfishers trained (FY23) (96% female) (FY23) and 30 (FY24) (100% female) Oyster biology and ecology: 28 trained (96% female) (FY23) Peer to peer study tour to Senegal (TRY Director, 1 Lamin and 2 Bullock shellfishers) (FY24) Shell Value Chain Study(FY24) 	<ul style="list-style-type: none"> New co-management planning process at step 4 (FY23) and step 9 (FY24) of 13 steps. Expanded to larger Foni Bolongs ecosystem Co-management training/planning workshops: 8 (FY23) and 10 (FY24). Landings data methodology piloted/ data recorded: 51 MT (FY23) and 62 MT (FY24) 	<ul style="list-style-type: none"> Participatory LULC and future potential land use mapped (FY23) Mangrove CAP developed: 45 participants (76% female) (FY23) 	<ul style="list-style-type: none"> Adoption and Dissemination of Food Portfolios (FY23/4) Tree Nursery Recruitment and Germplasm Support Food and non-food trees planted: 405 (FY23) and 507 (FY24), 46% survival Food recipes: 35 trained (91% female) (FY24) Home gardening: 31 (97% female) trained (FY24)

Note: Colors in this table indicate high (green), medium (yellow), and low (red) priority strategic approaches by site as per Table 1.

APPENDIX 3: The Gambia Press Briefing

HONOURABLE MINISTER'S PRESS BRIEFING UPDATE

PREAMBLE

- In the third quarter of 2023 a Multi-Sectoral Task Force was formed to review the allocation of demarcated plots of land at KAMALO Industrial Layout. The Task Force was to conduct a comprehensive review exercise to thoroughly examine the allocation processes. This process was triggered by the public outcry that multiple and inappropriate allocation were made; this led to the creation of the multi-Stakeholder review.
- The Multi-Sectoral Task-Force comprised of the following institutions.
 1. Ministry of lands, Regional Government and Religious Affairs
 2. Ministry of Trade, Industry and Employment
 3. Ministry of Justice
 4. National Audit Office
 5. Gambia Police Force
 6. Gambia Investment and Export Promotion Agency
 7. State Intelligence Services
 8. National Physical Planning Board

BACKGROUND

- During the assignment the Task Force had to review the relevant Laws, Policies and regulations governing land administration and Management in the country.
- These laws and policies play a vital role in regulating land allocation, development, environmental conservation, and sustainable growth.
- The Task Force also conducted series of interviews with allottees and made several visits to the demarcated KAMALO industrial Layout for proper verification.
- During the review the Task Force was made aware of the existence of a development plan alongside a sketch plan to be emanated from the development plan detailing the layout design.
- The sketch plan was made of two (2) phases;
 1. ***Kamalo Industrial Layout (Proper)***
 2. ***Kamalo Industrial Layout (Extension)***

PREPARATION AND DESIGN

- It was revealed that the growing demand for industrial Land had led to the director of physical planning to inform the hon. minister of the availability of land at KAMALO suitable for an Industrial Layout. However, there was no documentary evidence provided by physical planning. Nonetheless, the proposal was endorsed and a planning authority meeting of the Banjul and Kombo Saint Mary's Planning Authority.

DEMARCATION AND ALLOCATION

- Based on the sketch plan that was derived from the development Plan the Task Force noted that 40 plots were demarcated in the KAMALO proper and 28 plots in the KAMALO extension equaling to a total of 68 plots in both the proper and the extension.
- The distribution of plots in KAMALO industrial Layout as per different nationalities is as follows:

- a) *Forty-Seven (47) Gambians*
 - b) *Four (4) Mauritians*
 - c) *One (1) Moroccan*
 - d) *Seven (7) Indians*
 - e) *One (1) Chinese*
- It is important to note that the number of demarcated plots is 68 and some allottees have been allotted more than one plot. Also, among the 47 Gambians includes naturalized individuals.

DETAILED FINDINGS

- The Task Force noticed that the lack of a National Land Policy (NLP) has led to the lack of clarity of the mandates of various stakeholders in the Land administration process but also indicates lack of direction in the sector.
- The Task Force had limitations during the review as the master KAMALO file was missing and several attempts were made to retrieve the file but unsuccessful. The file contains information's and correspondences between Ministry and relevant stakeholders leading to the establishment of KAMALO as an industrial layout.
- The information in this file would have given the Task Force the opportunity to understand how both KAMALO proper and extension was initiated and subsequently approved.

POLICY AND LEGISLATIVE FRAMEWORK FOR PRESERVATION OF THE ENVIRONMENT

- Adhering to the laws would ensure that the allocation and development of the KAMALO Industrial Layout are conducted in a legal manner.
- Looking into the Policy and Legislative Framework for the preservation of the environment, the government of the Gambia designated TANBI Wetland National Park (TWNP) as a protected area among few other sites in the Gambia. The decision is anchored on several National policies:
 - A. **Banjul Declaration of 1977**
 - B. **The Gambia Environment Action Plan (GEAP) 1992**
 - C. **The National Biodiversity Action Strategy and Action Plan (NBSAP)1999**
 - D. **Vision 2020**

DECLARATION OF TANBI AS RAMSAR SITE

- The Gambia ratified the Ramsar Convention on wetlands 1996. The Tanbi Wetland National Park (TWNP) was established in 2001 and this covers sites encompassing:
 - ⇒ **Banjul**
 - ⇒ **Kanifing**
 - ⇒ **Brikama**
- The wetlands capture incoming water and rainfall, thus playing an important role in the shoreline stabilization and flood control, thereby acting as a hydrological buffer zone/ (Reservoirs or lakes.)
- KAMALO is one of the few elevations within the Tanbi Wetland with a significant potential for the growth of aquatic lives. The marine reptiles living in the water rely on the elevations for their breeding and resting. The forested nature of the site enables it as a habitat of other wild animals and birds, also the migrated species that frequent The Gambia during certain period in a year. Therefore, the transformation

of the site to accommodate industrial activity has serious ramification for the wild lives and aquatic creatures.

NO EVIDENCE OF ENVIRONMENT IMPACT ASSESSMENT (EIA)

- The taskforce noted that an EIA process was never initiated by the proponent (the above mentioned department/ their parent ministry) nor completed before lands were allocated and development work started.
- At this point, it will be a guess work to know the full extent of environmental and social impacts to be occasioned by the ongoing development. If an ESIA was done, it would have given such information. However, one can safely say the following are possibilities:
 - ⇒ **Increase encroachment and land conversion into the Wetland**
 - ⇒ **pollution through waste dumping and spilling into the wetlands**
 - ⇒ **increased mangrove die-back due to human induced activities.**

MINISTERS APPROVAL WITHOUT FOLLOWING DUE PROCESS

Section 13 (2) of the State Lands Act, The Planning Authority shall advise whether or not the proposed application conforms with the Approved Plan and established planning standards”.

- Section 14 of the State Land Act further states” The Department shall, if advised that the proposed application conforms with the Approved Plan and established planning standards, submit the application to the Minister for approval”.
- For those seeking industrial land allocations, the application process necessitates the submission of several documents. These include a completed application form, a proposed business plan, proof of funding (typically in the form of a bank statement), the proposed building design, business registration details, and clearance from the Gambia Investment and Export Promotion Agency (GIEPA).
- During the review exercise, the task force noted that 28 Allottees were issued with allocation letters at Kamalo extension without any evidence of approval minuted in the file.

ALLOCATION WITHOUT EVIDENCE OF MINISTER’S APPROVAL

Section 14 of the State Land Act further states” The Department shall, if advised that the proposed application conforms with the Approved Plan and established planning standards, submit the application to the Minister for approval”.

- The Task Force noted with concern that 6 Allottees were issued with allocation letters without any evidence of Ministerial approval minuted in the file by the Minister contrary to the above section of the State Lands Act. We noted that these Business entities were allocated in some instances more than one plot.

ALLOCATION TO INELIGIBLE APPLICANTS

- During the review, it was noted that some allottees were allocated plots at Kamalo Proper with no evidence of business registration certificate.
- Also, no evidences of the application fee of D50,000 contrary to the dictates of the Act.

ALLOCATION OF MORE THAN ONE PLOT TO AN ALLOTTEE

- It was noted that more than one plot was allocated to certain companies. However, the justifications for allocating more than one plot was not provided for review. For example, there was an instance where applicants whose purpose for applying was for a warehouse were given 2 plots while those who plan to do production were given only one plot casting doubt about the criteria used to determine these allocations.

SUMMARY OF ALLOCATION ANOMALIES

- In summary the Task Force discovered a lot of anomalies in the allocation process of the Kamalo Industrial Layout and these are as follows:
 - ⇒ Minister's approval without following due process
 - ⇒ Allocation without evidence of minister's approval
 - ⇒ Allocation to ineligible applicants
 - ⇒ Allocation of more than one plot to an allottee
 - ⇒ Unpresented application files
 - ⇒ Missing documents from applicant's file
 - ⇒ The lack of evidence of an ESIA

RECOMMENDATION FROM THE TASKFORCE

1. MoLRG should ensure that strategic documents such as the National Land Policy is developed, implemented, and monitored. The document should clearly outline the country's agenda pertaining to land and the roles and responsibility of all the authorities involve in land administration
2. The Ministry should endeavour to have a proper filling system in place and effort should be made to ensure that the Kamalo file is produced.
3. The decision to make Kamalo an industrial layout should be reconsidered as it could pose serious adverse environmental challenges as most of the investors have projected to build heavy industries on the site.
4. The above can however be validated through a comprehensive environment audit in accordance with regulation 30 of the cited EIA Regulations. It is advisable for the NEA to perform comprehensive General and specific Environmental Impact Assessments (EIAs) at the Karmalo site to determine any existing or potential damage. These assessments will serve as crucial information for making informed decisions on a broad scale.
5. The TaskForce recommends that the entire allocations at Kamalo Extension to be revoked simply because all the 28 allocations did not follow due process. In addition, there is no development on the site.
6. There was no evidence provided to the committee that Environmental Impact Assessment was conducted either by the Ministry or the allottees before allocations were done. Therefore, the opportunities associated with such an important assessment was lost, due to the Ministry's failure for not complying with relevant law.
7. The Taskforce recommends that those allocations without evidence of Ministerial approval be revoked. The Department of Lands and Survey under the leadership of the former Director of Lands did not follow the due process by allocating without any evidence of Ministerial approval in the files.
8. In the absence of business registration certificate and receipt of payment application fee the said allottee should not have been considered for allocation as consequence the Committee recommends that their allocation should be revoked. Based on the forgoing, it is evident that the Department of Lands and Survey under the leadership of the former Director of Lands did not properly scrutinize the submission of the applicant before the allocation.

9. The Task Force recommends establishing clear criteria/policy for allocating multiple plots to an individual in the future. These criteria will serve as a transparent and accountable yardstick to determine qualifications and enhance the allocation process to be fair and just. In the absence of a clear criteria, they should forfeit the other plot to the state.
10. In the case of one of the allottees, no ministerial approval was obtained, and the task force was unable to ascertain how he received a photocopied allocation letter. Consequently, the task force recommend that any allocation lacking ministerial approval be deemed invalid and revoked.
11. Additionally, the taskforce further recommends initiating administrative sanctions against a Physical Planning Officer, who presented a photocopy of the allocation letter to the applicant and devise preventive measures for similar incidents in the future.
12. The taskforce recommends that allocation to Painterman be revoked. It further recommends that the Director of Lands should be held liable for recommending the applicant by ignoring the professional advice of a Senior Officer at the Physical Planning and Housing.
13. By submitting personal bank statement instead of a company's bank statement raises doubts about the liquidity of the company at the time and as such the application did not meet the requirement to be allocated plot, and as a result it should be revoked.

APPENDIX 4: Oyster Landings Data 2023 and 2024

Table 18: Comparisons of total catch and harvesting activity between the 2023 and 2024 harvest seasons.

Country	Site	Year	Total Catch	Total Catch	Number of Harvsters/Day		
			(mt)	(kg)	Max	Min (>0)	Average
Ghana	Densu	2023	103.35	103347	33	1	3
		2024	23.95	23951	12	2	1
The Gambia	Bullock	2023	50.96	50976	35	2	9
		2024	62.35	62349	46	1	8
	Siaka Tenda	2023	34.66	34661	16	4	6
		2024	26.18	26175	25	1	8
	Lamin Lodge	2023	45.11	45110	26	2	6
		2024	73.28	73281	33	1	8

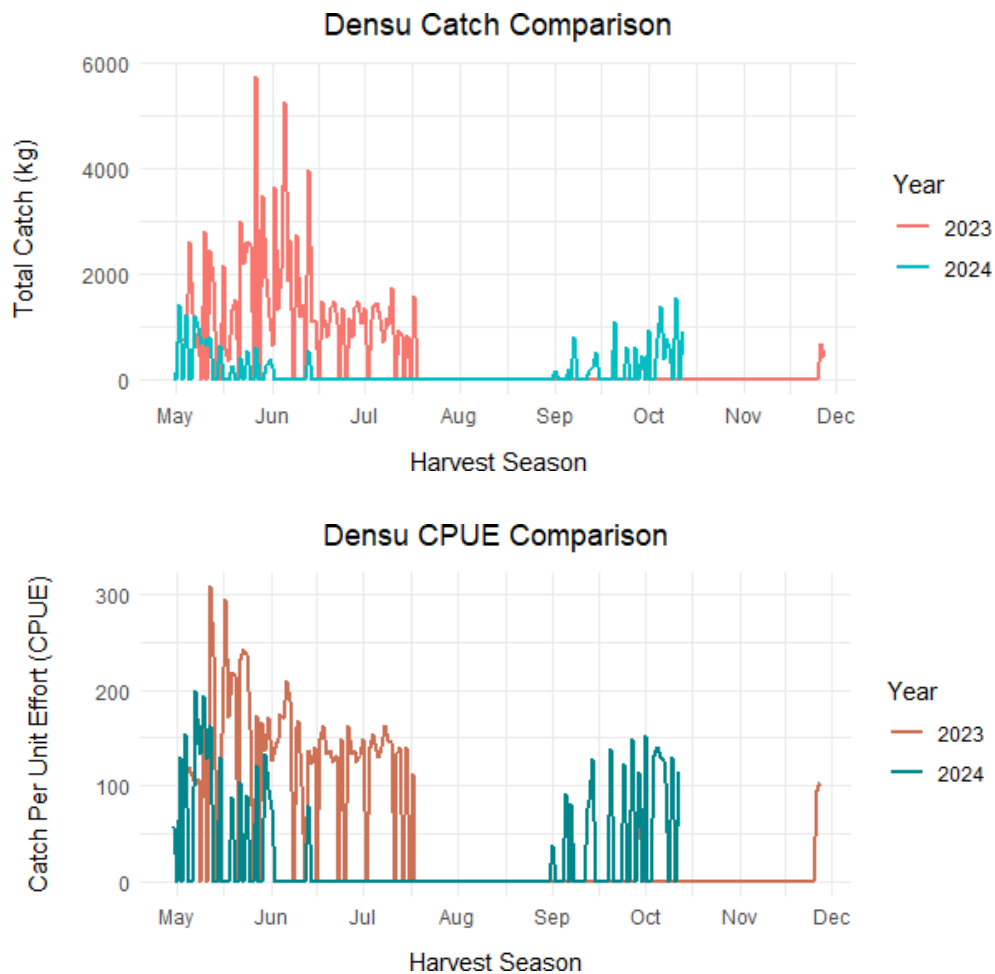


Figure 49:: Comparison of catch amounts (top) and catch per unit of effort (CPUE) (bottom) over the 2023 and 2024 harvest seasons in Densu, Ghana.

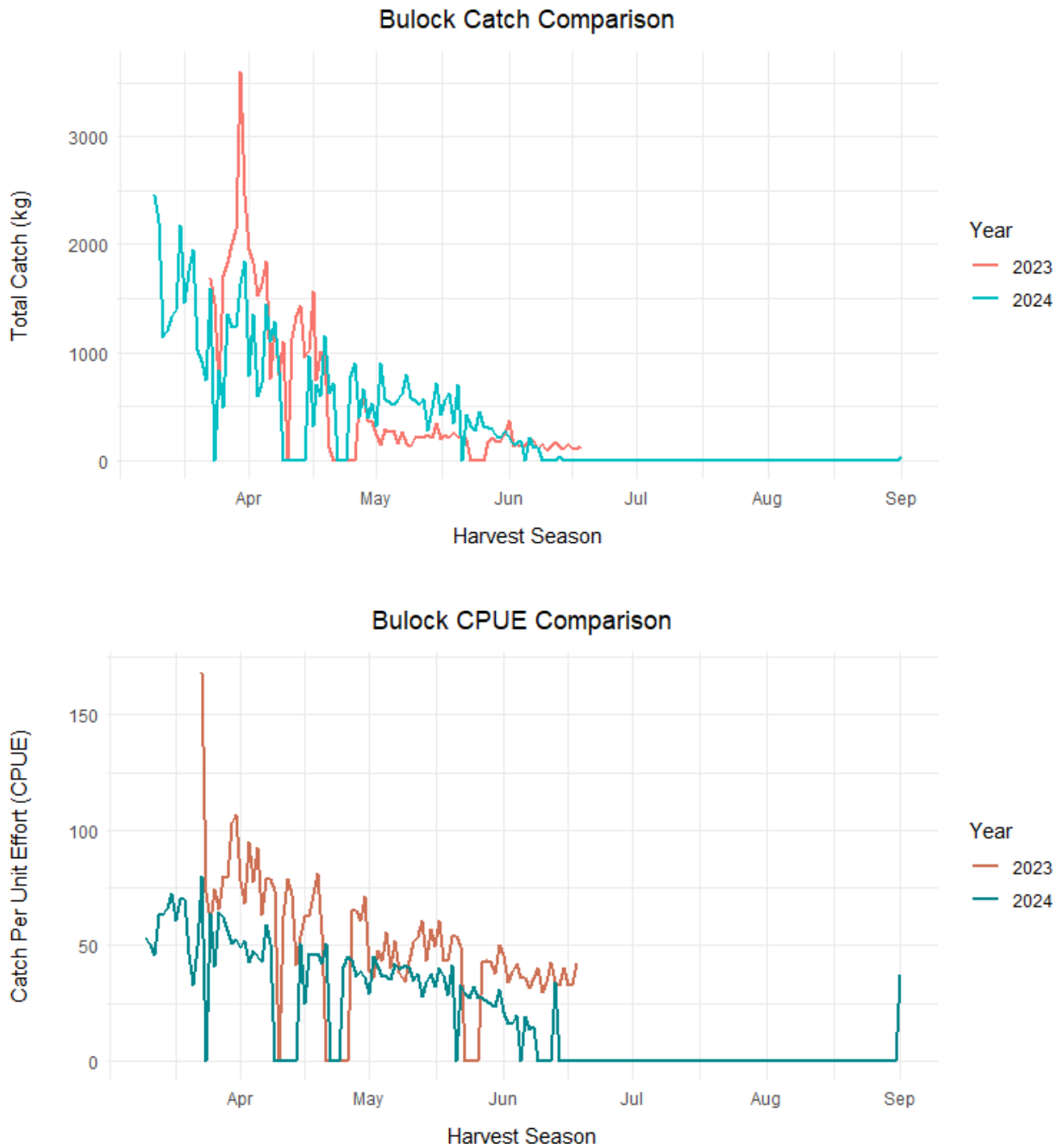


Figure 50: Comparison of catch amounts (top) and catch per unit of effort (CPUE) (bottom) over the 2023 and 2024 harvest seasons in Bullock, The Gambia.



Figure 5 I: Comparison of catch amounts (top) and catch per unit of effort (CPUE) (bottom) over the 2023 and 2024 harvest seasons in Siaka Tenda, Lamin, The Gambia.

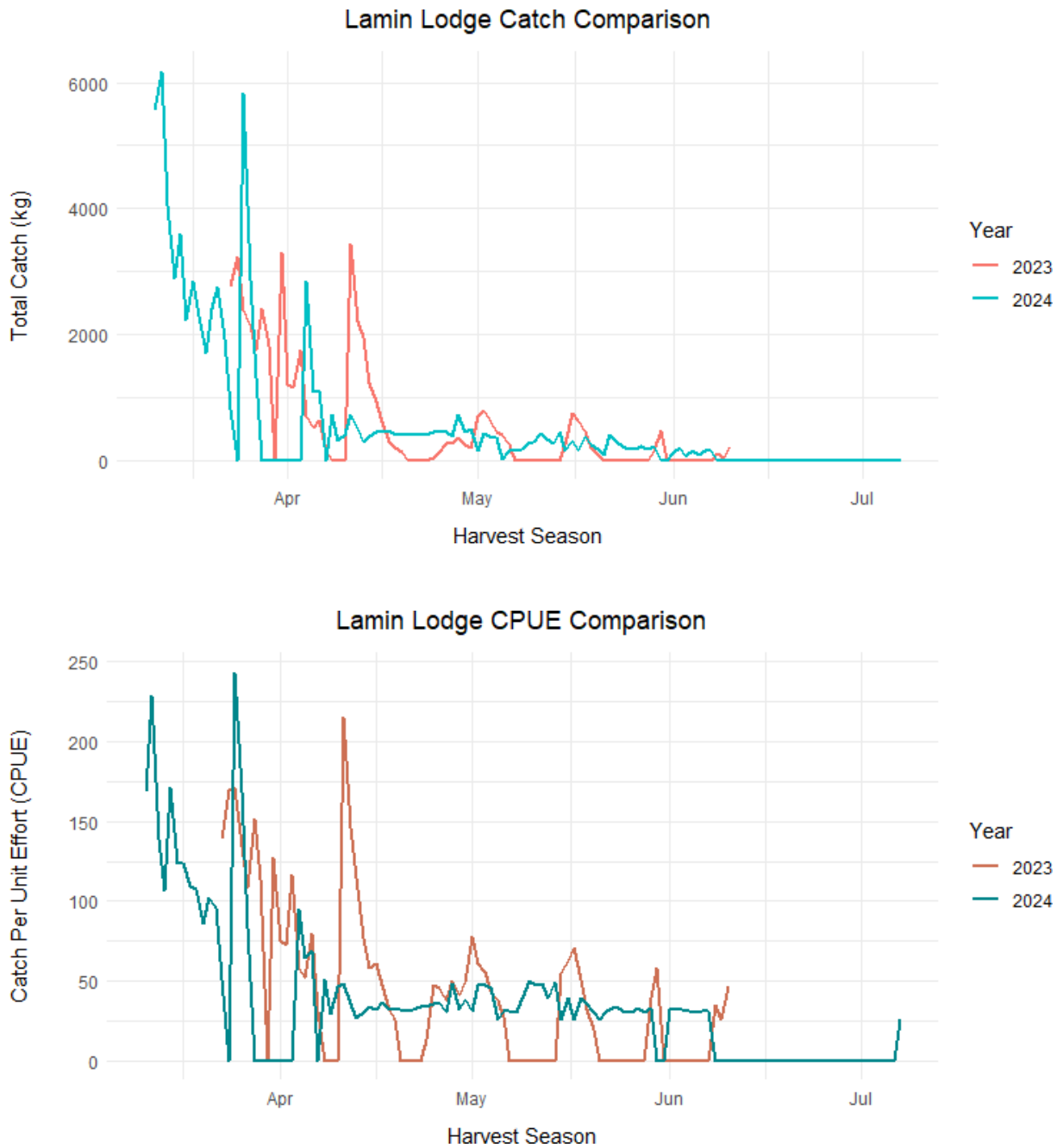


Figure 52: Comparison of catch amounts (top) and catch per unit of effort (CPUE) (bottom) over the 2023 and 2024 harvest seasons in Lamin Lodge, Lamin, The Gambia.

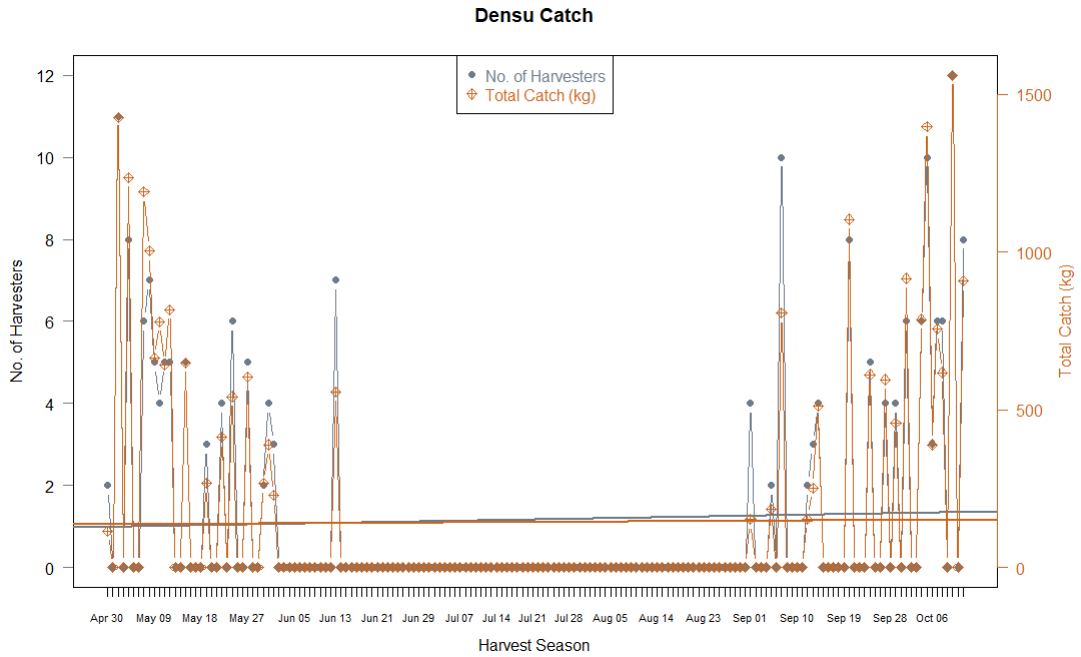


Figure 53: Trend in the number of harvesters and total catch amounts over the 2024 harvest season in Densu, Ghana.

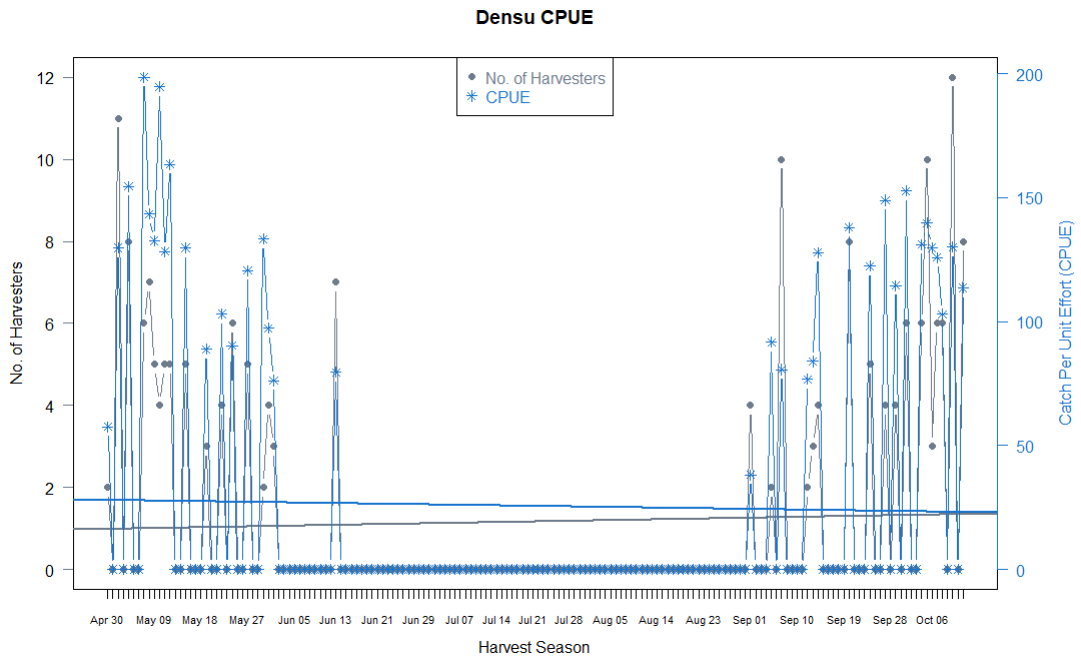


Figure 54: Trend in the number of harvesters and catch per unit of effort (CPUE) over the 2024 harvest season in Densu, Ghana.

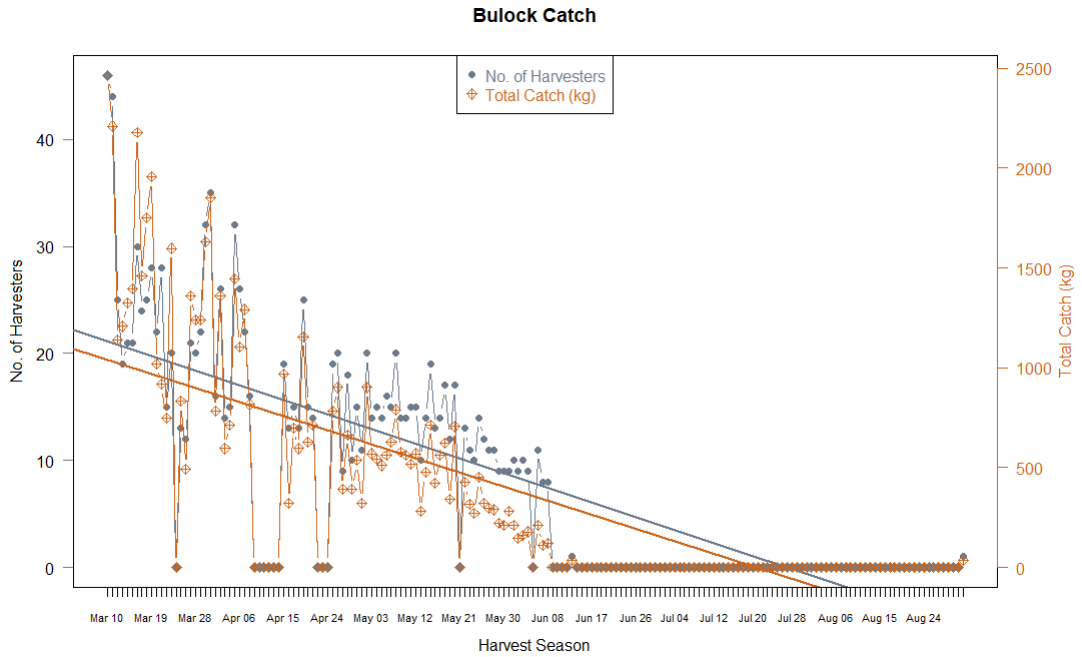


Figure 55: Trend in the number of harvesters and total catch amounts over the 2024 harvest season in Bullock, The Gambia.

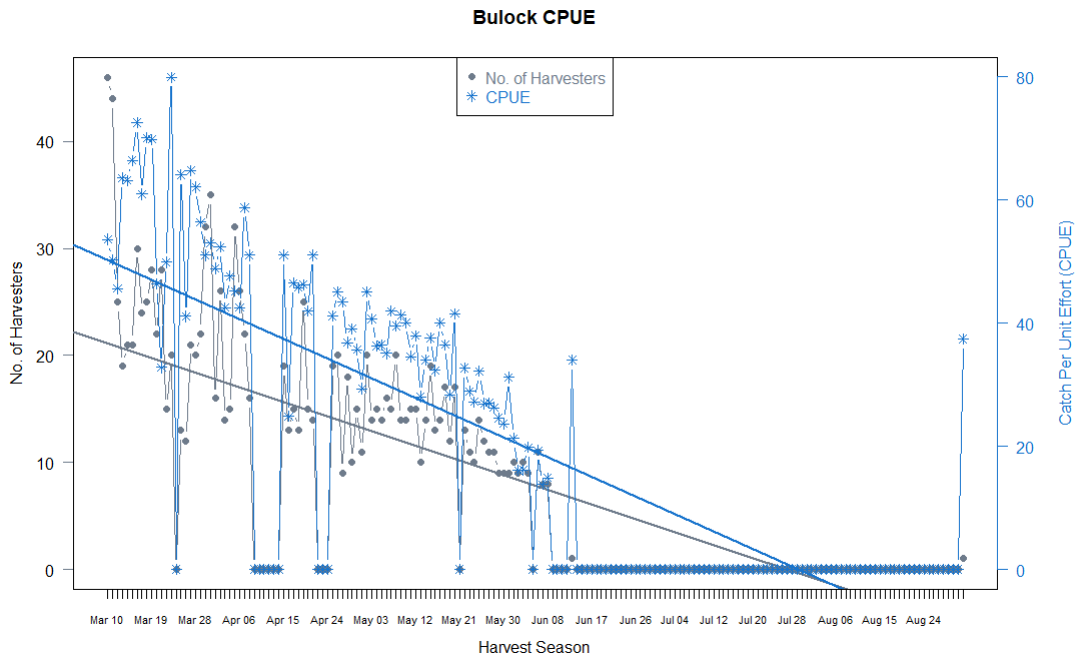


Figure 56: Trend in the number of harvesters and catch per unit of effort (CPUE) over the 2024 harvest season in Bullock, The Gambia.

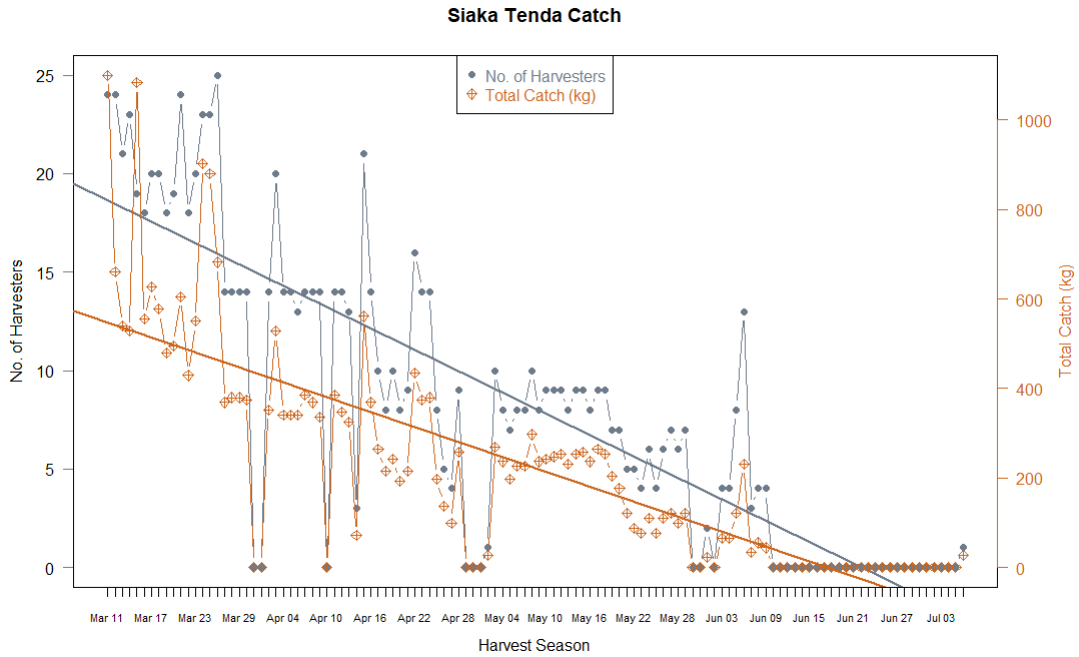


Figure 57: Trend in the number of harvesters and total catch amounts over the 2024 harvest season in Siaka Tenda, Lamin, The Gambia.

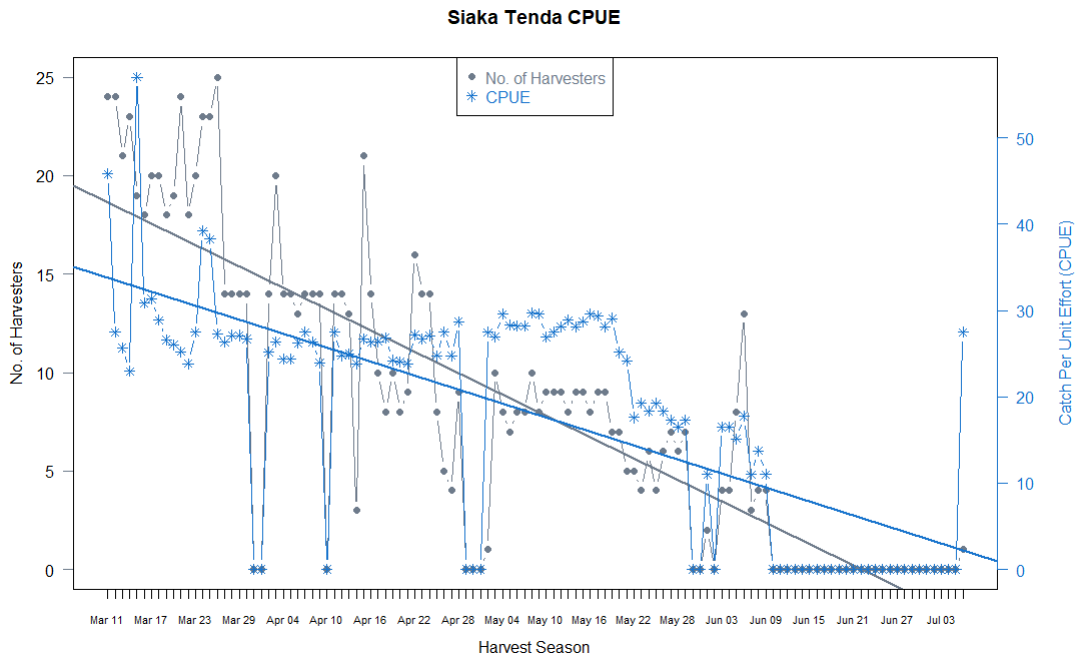


Figure 58: Trend in the number of harvesters and catch per unit of effort (CPUE) over the 2024 harvest season in Siaka Tenda, Lamin, The Gambia.

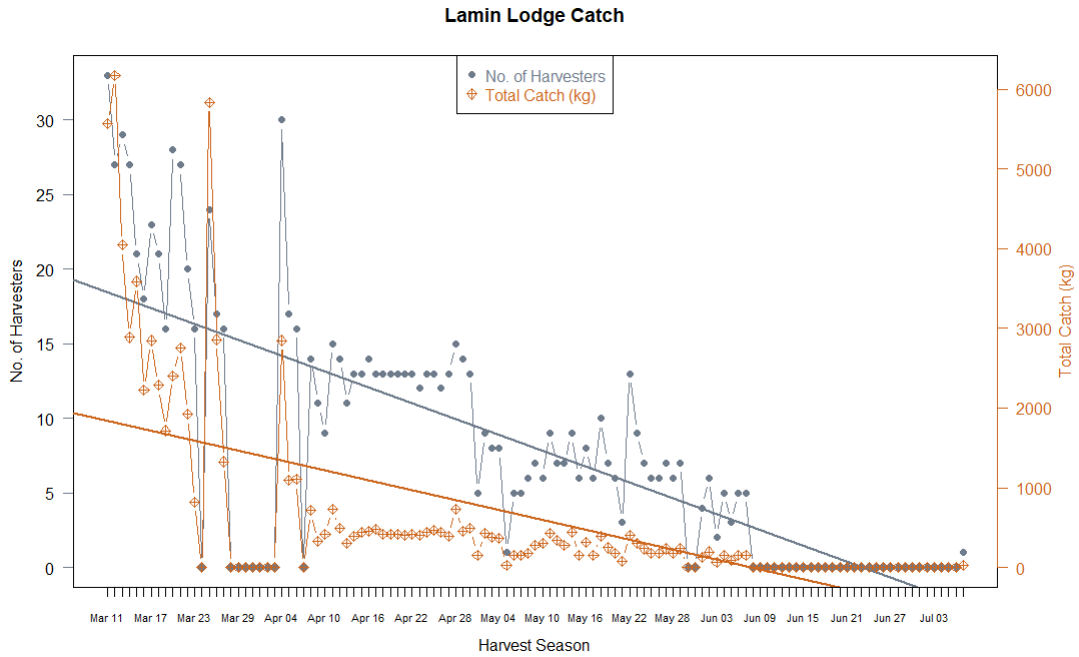


Figure 59: Trend in the number of harvesters and total catch amounts over the 2024 harvest season in Lamin Lodge, Lamin, The Gambia.

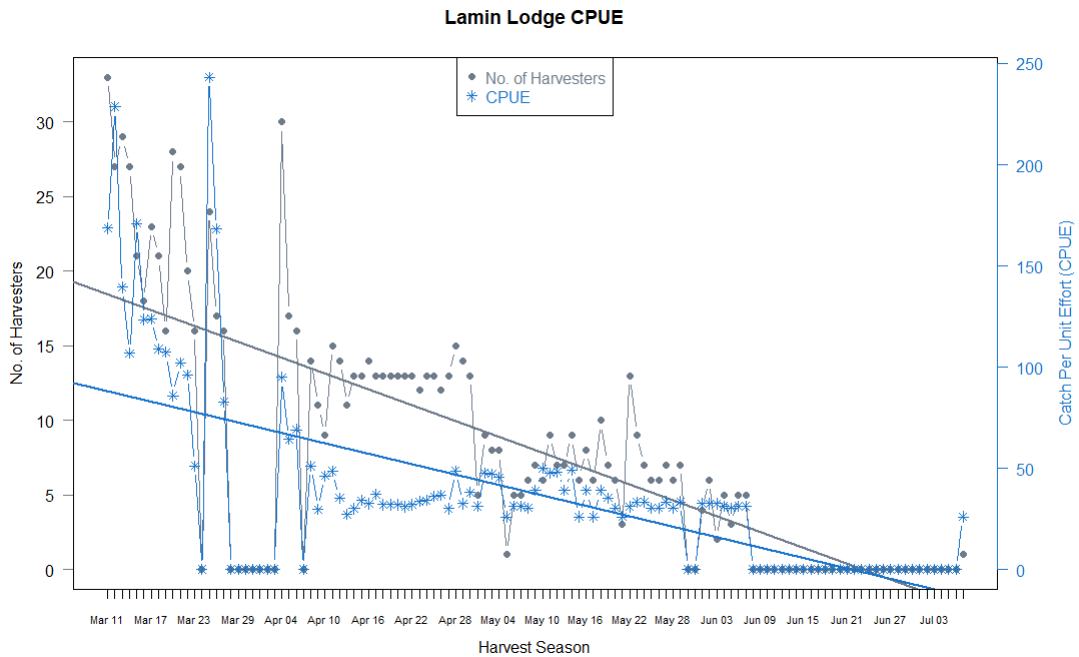


Figure 60: Trend in the number of harvesters and catch per unit of effort (CPUE) over the 2024 harvest season in Lamin Lodge, Lamin, The Gambia.