

Scoping assessment of sustainable livelihood opportunities in the artisanal fishing communities of the Central Region of Ghana



Project implemented by:



Hen Mpoano

With financial support from:



Far Dwuma Nkodo

Securing Sustainable Fisheries



Far Dwuma Nkodo

Securing Sustainable Fisheries

This publication is available electronically on the **Environmental Justice Foundation (EJF)** website at www.ejfoundation.org and the **Hen Mpoano** website at www.henmpoano.org

Compiled by:

Edna Ekua Kwansima Quansah (edna.quansah@ejfoundation.org)

Disclaimer:

This publication is made possible by the generous support of the European Union. The contents are the responsibility of the authors as part of the project to “Ensure greater environmental sustainability and social equity in Ghana’s fishery sector through a reduction of illegal fishing and strengthened capacity to support legal, sustainable and co-managed fisheries” and do not necessarily reflect the views of the European Union.

Environmental Justice Foundation (EJF)

H/No. 4
8th Close
North Ola, Cape Coast
Central Region
Ghana

Email: info@ejfoundation.org
Tel: +233 (0)33 215 0119

Hen Mpoano

38 J. Cross Cole Street
Windy Ridge Extension
East Tanokrom, Takoradi
Western Region
Ghana

Kofi Agbogah, Director
Email: kagbogah@henmpoano.org
Tel: +233 (0)31 2020 701

The **Environmental Justice Foundation (EJF)** and **Hen Mpoano** are working in partnership under the **Far Dwuma Nkodo – Securing Sustainable Fisheries** project, with financial support from the **European Union** and the **German Federal Ministry for Economic Cooperation and Development (BMZ)**. The Far Dwuma Nkodo project is a three-year project to secure greater environmental sustainability and social equity in Ghana’s fishery sector.

Project implemented by:



info@ejfoundation.org
+233 33 215 0119

Hen Mpoano

info@henmpoano.org
+233 31 2020 701

With financial support from:



Responsibility for the information and views set out in this report lies entirely with the authors.

TABLE OF CONTENTS

| | |
|--|-----------|
| 1. INTRODUCTION | 4 |
| 2. STUDY OBJECTIVES | 7 |
| 3. METHODOLOGY AND STUDY AREAS | 7 |
| 4. SUMMARY OF FINDINGS | 7 |
| Introduced alternative livelihood options – failures, successes and challenges | 7 |
| Lessons from introduced livelihood options in the coastal regions of Ghana | 10 |
| Fisher perspectives on the state of fishing and willingness to engage in alternative livelihoods | 11 |
| Preferred alternative livelihood options | 14 |
| Overview of alternative livelihood options proposed by communities | 20 |
| Fisher perspectives on sources of finance for alternative livelihood options | 22 |
| 5. CONCLUSIONS AND RECOMMENDATIONS | 24 |
| APPENDIX A – Interview guide | 26 |
| APPENDIX B – Details of engagements | 28 |

LIST OF ACRONYMS

| | |
|---------|--|
| AL | Alternative livelihoods |
| CEWEFIA | Central and Western Fishmongers Improvement Association |
| CR | Central Region |
| DAA | Development Action Association |
| EJF | Environmental Justice Foundation |
| FAO | Food and Agricultural Organization of the United Nations |
| FC | Fisheries Commission |
| IUU | Illegal, unreported and unregulated fishing |
| MoFAD | Ministry of Fisheries and Aquaculture Development |
| MSY | Maximum Sustainable Yield |
| OCTP | Offshore Cape Three Points |
| SLED | Sustainable Livelihoods Enhancement and Diversification |
| UCC-CCM | University of Cape Coast - Centre for Coastal Management |
| USAID | United States Agency for International Development |
| WRCF | Western Region Coastal Foundation |

1. INTRODUCTION

Ghana's marine fisheries are in steep decline¹, with crucial implications for the income, food security and economic development of fishing communities along Ghana's coast. The marine fisheries sector serves as the primary source of income for 186 coastal villages², and provides direct or indirect livelihoods for around 10% of the population³. Over the past two decades, incomes of Ghana's small-scale fishers have dropped by as much as 40%⁴, as fish populations have plummeted while fishing effort has continued to rise⁵. In recent years, management has focused on trying to halt and potentially reverse declines in the fishery through measures such as closed seasons, to safeguard the livelihoods of millions living in coastal communities, and the food security of the nation.

The Ghanaian fishing industry comprises the marine and inland sectors, with the marine sector producing around 85% of total catches⁶. The marine fishery consists of the artisanal, inshore and industrial sub-sectors. The artisanal fishery is the most important fisheries sector in Ghana in terms of its contribution to production and local fish supply⁷. The sector contributes approximately 70-80% of the total annual marine fish landings⁸ and employs around 98% of fishers in the country, or approximately 107,518 fishermen⁹.

Ghana's artisanal fishing sector comprises over 12,000 motorised and non-motorized wooden canoes, which target a range of species, including the small pelagics such as *Sardinella aurita* (Round Sardinella), *Sardinella maderensis* (Flat Sardinella), *Engraulis encrasicolus* (European Anchovy) and *Scomber colias* (Atlantic Chub Mackerel)¹⁰. *Sardinella* populations have crashed in recent years, from peak landings of around 140,000 metric tonnes in the early 1990s, to annual landings of around 20,000 tonnes between 2011 and 2016¹¹. Recent assessments estimate that Ghana's small pelagic fishery could soon collapse in the absence of robust

management interventions¹². These population declines affect the profitability of fishers and increase the economic vulnerability of many small-scale fishing communities who depend on fisheries as their primary source of livelihood¹³. As part of efforts to reverse the declining trend in fisheries resources and rebuild fish populations, the Ministry of Fisheries and Aquaculture Development (MoFAD), in a Management Plan for the period 2015-2019, has set out measures to reduce current levels of fishing effort and capacity¹⁴. According to the Management Plan, based on a calculation of Maximum Sustainable Yield (MSY), the number of canoes required to sustain the fishery is 9,095¹⁵. With over 12,000 canoes currently active in the fishery, this will imply a loss of livelihood for some actors in the fishery sector and the need for alternative or at least supplementary economic opportunities. Indeed, a lack of alternative or supplementary livelihoods has been identified as a factor contributing to increased vulnerability to poverty in Ghana's artisanal fisheries sector¹⁶.

The term 'alternative livelihood' is widely used to describe interventions that aim to reduce the prevalence of activities deemed to be environmentally damaging by substituting them with lower impact livelihood activities that provide at least equivalent benefits¹⁷. This includes initiatives that build on traditional customs and knowledge, and which empower local communities to utilize the natural resources under their control in a sustainable manner for enhanced welfare¹⁸. Approaches may include the provision of an alternative resource to the one being exploited, provision of an alternative *occupation* or source of income, or encouraging an alternative *method* of exploiting a resource that has a lower impact than the original method¹⁹. All approaches share a common objective, namely to provide local people with an alternative means of making a living that reduces pressure on a particular element of biodiversity²⁰.



Canoes at Elmina port in Ghana's Central Region.

According to previous research, artisanal fishers in Ghana would consider alternative livelihoods if viable and economically attractive options were to be available²¹. Cobbina (2018) observed a positive relationship between the level of access to alternative livelihoods among artisanal fishers and willingness to exit the fishery²². Over 70% of fishers surveyed by Asiedu and Nunoo (2013) expressed a willingness to switch to alternative occupations, with a preference for ventures such as eco-tourism, aquaculture, vegetable farming and livestock rearing²³. Gardner (2016) observed that many fishers already engage in other economic activities in addition to fishing, for example farming during the non-upwelling season, and that livelihood-based interventions could seek to diminish the role of fishing in the livelihood matrix, rather than replace it entirely²⁴.

Where alternative livelihood options have been introduced in Ghana, they have often failed or faced difficulties, particularly in terms of sustaining the interventions beyond the end of individual projects²⁵. This is recognized as a major challenge of particularly “*single-solution, supply-driven measures*”²⁶ that may experience some initial success when supported by projects but often prove to be unsustainable in the long-term. In a review of interventions in Ghana’s Western Region, Gardner (2016) concluded that projects based on high input, high technology production models, requiring both high start-up capital and extensive training, present an insurmountable barrier to most fishers, and necessitate continuous subsidies by outside development agencies²⁷.

More broadly, there is a scarcity of evidence concerning the effectiveness of alternative livelihood projects in reducing pressure on fishery resources and improving the conservation status of a biodiversity target²⁸. Alternative livelihood projects have been criticized as “*initiatives that promote unsustainable solutions that are poorly adapted to people’s capacities, have limited market appeal and fail to reflect people’s aspirations for their future*”²⁹. As one author notes “[] when alternatives are introduced, they are often chosen from a standard menu of options with little consideration of the capacities, aspirations, needs or historical development of the communities concerned”³⁰.

The limited success of projects in the fisheries context has been attributed, at least in part, to a lack of understanding of who fishers are, what their livelihoods are, and what influences them³¹. Commentators have also warned of the unintended consequences of livelihood interventions, where additional incomes rather allow for additional capital investments in fishing activities, resulting in sustained or even accelerated exploitation of the resource³². Brugère *et al.* (2008) call for more research into the relationship between the uptake of livelihood diversification strategies and fishing pressure, and for the development of holistic programmes that combine policy measures for diversification and fishery conservation³³.

Available literature points to a need for carefully designed, context-specific livelihood programmes, assessed against existing portfolios of activities and individual aspirations³⁴. As Wright *et al.* (2016) note “*to be a genuine substitute, the promoted alternative must align with the needs and aspirations of the people concerned and fulfill the same range of functions characteristic of the original activity*”,

for example in terms of offering similar levels of prestige and job satisfaction³⁵. This necessitates a good understanding of why people engage in a particular activity, and its importance along a range of dimensions, beyond a focus on monetary benefits and economic substitutes³⁶.

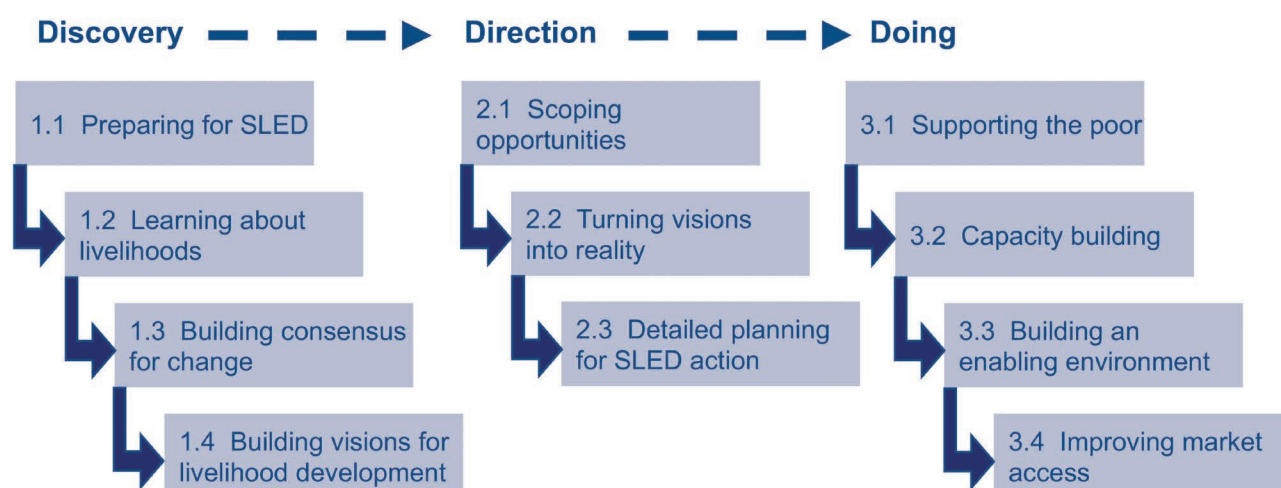
In this context, seeking the full and active participation of resource users may be seen as critical to the success of any potential livelihood intervention³⁷. This aligns with the principles of the Sustainable Livelihoods Approach for Sustainable Livelihoods Enhancement and Diversification (SLED) (Figure 1 and Box 2), which insists that all development should begin by looking at people and understanding their capacities and potential³⁸. Implementation of this approach in practice has found that if ideas for livelihood change build on existing strengths of participants, the sustainability of these ideas once they are put into practice is likely to be far stronger³⁹. Indeed, there is evidence from rural communities in Ghana that livelihood activities in which participants have already demonstrated an interest, and have the required know-how will be more likely to succeed⁴⁰. Likewise, Gardner (2016) recommends providing partner communities with training and support to suggest and develop revenue-generating activities themselves, rather than proposing or imposing externally developed interventions on communities⁴¹. This aligns with the view of McCay *et al.* (2003), that engaging with resource users is the best way to begin to find solutions to fisheries problems⁴².

Box 1: Definition

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

Carney (1998), cited in Campbell J. (2008) *Systematic approaches to livelihoods enhancement and diversification: a review of global experience*. IMM Ltd., Exeter, U.K. / IUCN, Gland, Switzerland and Colombo, Sri Lanka / CORDIO, Kalmar, Sweden / ICRAN, Cambridge, U.K.

Figure 1: Phases of the Sustainable Livelihoods Enhancement and Diversification approach (SLED)



Source: IMM Ltd (2008)

Box 2: Key Principles of the Sustainable Livelihoods Approach for SLED

Key principles that should guide all action that aims to support the development of sustainable livelihoods include:

- **Being people-centred** – action should focus on the impacts it will have on the livelihoods of people (not on institutions, resources, technology).
- **Building on strengths** – all action should seek to build on people's own capacities, skills, knowledge and aspirations.
- **Giving voice and choice** – action should always seek to increase people's capacity and opportunity to give voice to their concerns and it should aim to increase their choices and their capacity to make informed choices.
- **Focussed on sustainability** – action should always take account of economic, social, institutional and environmental sustainability.

Source: IMM Ltd (2008)

With this in mind, the Far Dwuma Nkodo project partners set out to undertake a scoping assessment of fisher perspectives on non-fisheries livelihood opportunities in Ghana's Central Region. Given the severity of fish population declines and extent of over-capacity in the artisanal fishing sector, the assessment focused solely on non-fisheries livelihood opportunities, as opposed to opportunities for enhancing livelihoods based on improved methods of fishing or fish processing. This anticipates management interventions in the near to medium term that will seek to limit entry to the fishery, for example through a cap on the total number of canoes and moratorium on new entrants.

More specifically, the assessment was intended to provide an initial step towards the design of a sustainable livelihood programme that:

- Enhances or diversifies the non-fisheries livelihood opportunities open to fisher families.
- Reduces dependence on fishing and vulnerability of fishers in the face of fisheries declines and implementation of management measures (such as closed seasons and capacity reduction).
- In the longer term, leads to a reduction in fishing effort and contributes to the recovery of fish populations.

It is expected that the livelihood programme will consider strengthening and improving existing non-fisheries livelihood opportunities, while also identifying and promoting new livelihoods options, and supporting the creation of an enabling environment for their development.

2. STUDY OBJECTIVES

The study was primarily aimed at understanding alternative or supplementary livelihood opportunities in the context of coastal fishing communities, with the objective of arriving at options that are acceptable to fishers and fishmongers in coastal communities in the Central Region of Ghana. In achieving this objective, the study sought to:

1. Assess both successful and failed interventions in the region and, to the extent relevant, elsewhere in the country.
2. Assess potential economic ventures available to fishers and fishmongers in the Central Region according to the following parameters:
 - a. Requirements and entry costs
 - b. Projected economic benefits and marketing opportunities
 - c. Challenges
3. Gather fisher perspectives on potential sources of financial or other support available for the selected interventions.

3. METHODOLOGY AND STUDY AREAS

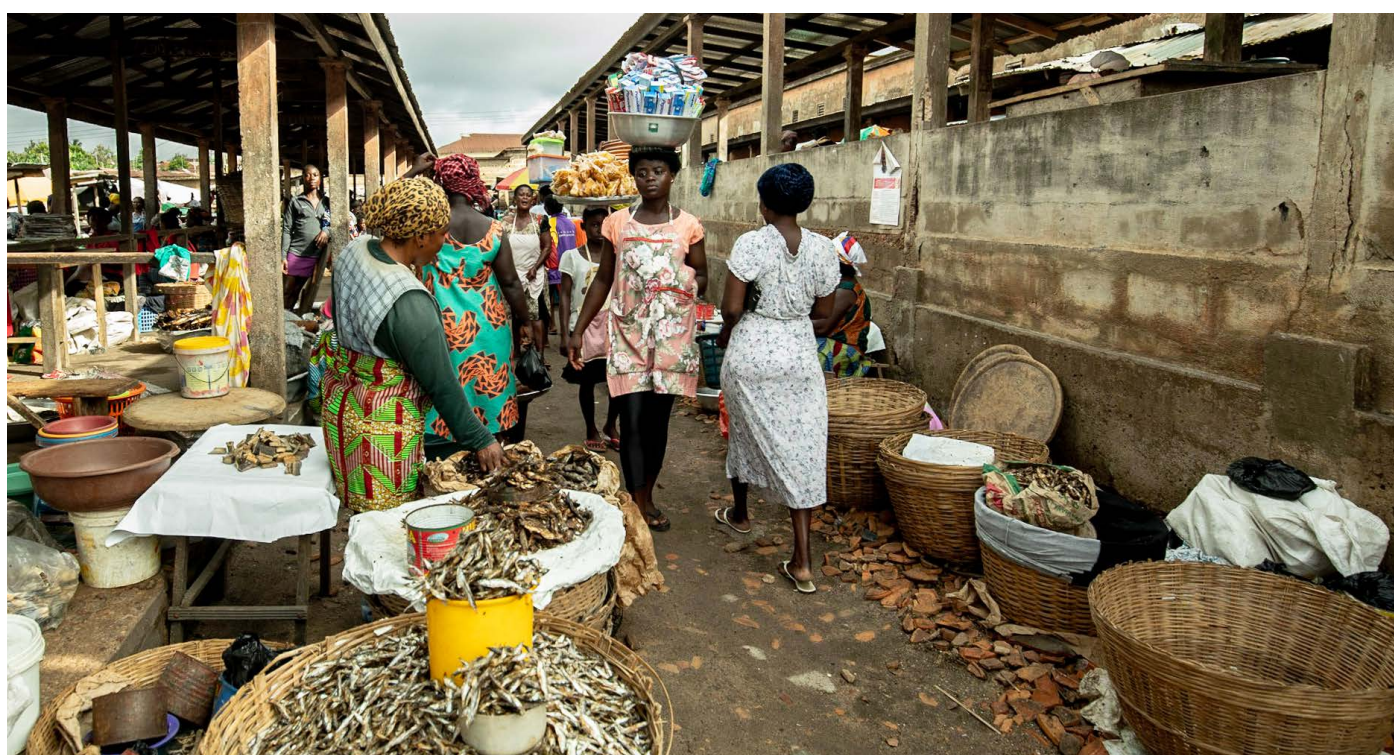
The study was conducted in the Central Region of Ghana from July to September 2018. Using the five administrative zones of the Central Regional Fisheries Commission (FC), communities were selected on a purposive sampling basis to cover all fishing types/gears, as well as boat owners and fish processors for focus group discussions. An interview guide (see **Appendix A**) was developed to guide the discussions. Secondary data on livelihood programmes and interventions within the region and beyond were collected through a literature search and interactions with key informants. Key informant interviews were conducted to solicit information on the success and failure of introduced alternative livelihood options as well as lessons learnt.

A total of 24 focus group discussions and 13 key informant interviews were held, involving fishers using the six different gear types as identified by the 2016 Ghana Marine Canoe Frame Survey (purse seine, set net, hook and line, ali net⁴³, beach seine and drift gill net), as well as boat owners and fish processors. In all, the study reached 292 fishers and fishmongers from 17 different communities in the Central Region as well as academics, non-governmental organisations (NGOs), government institutions, 'konkohemaas' (Queen fishmongers) and Chief fishermen across the Central, Western and Greater Accra Regions. Each focus group consisted of an average of 12 participants. A detailed breakdown of engagements and study areas is provided in **Appendix B**. Responses from the field were coded and analyzed using the Atlas.ti software version 8, to be able to identify patterns and derive percentages from the content of responses.

4. SUMMARY OF FINDINGS

Introduced alternative livelihood options – failures, successes and challenges

A number of livelihood programmes have been introduced for artisanal fishers along the coast of Ghana. These have been implemented by various NGOs, corporate organisations and academic institutions, with proposals also originating from the MoFAD. The initiatives have been associated with varying levels of success and some challenges. Several of these interventions have been reviewed in this study through key informant interviews and relevant literature, and lessons drawn from them. The findings are summarised below.



Fish for sale at Bawjiase market in Ghana.

Organisation:

University of Cape Coast (UCC) Centre for Coastal Management (CCM), under the auspices of the Sustainable Fisheries Management Project (SFMP) funded by the United States Agency for International Development (USAID)

Intervention: Bee keeping, snail rearing and oyster farming (the latter still under research). Interventions were chosen after a needs-based assessment of fishers in the Central and Western Regions. Specific communities targeted in the Central Region are Elmina, Moree, Apam and Narkwa.

Approach: Provision of supplementary livelihoods to selected communities through established community-based groups, as well as newly created groups for this purpose. The community-based groups were used as demonstration sites and start-up training was organised for the fishers in these groups for the individual farming practices. They were also empowered and trained on leadership skills. The centre liaised with the business development centres of the respective District Assemblies for further support on the trainings.

Successes/Failures: The interventions resulted in a few successes, such as building capacity for the introduced livelihoods, but there were many challenges. One of the challenges identified was a limited capacity and willingness to undertake work as a community. The fishers were not able to personally identify with the interventions as they felt they were being carried out in a group and hence someone else was responsible for the success of the intervention. As a result, no one was willing to take ownership of the ventures, especially as they felt this was donor-supported, and therefore owned by the donors. Furthermore, fishers wanted to see immediate benefits from the intervention and lacked the patience to wait for snails to mature and bees to produce honey before sale.

Organisation:

Central and Western Region Fishmongers Improvement Association (CEWEFIA)

Intervention 1: Training of women in batik and tie-dye processes, soap making, baking, cassava processing (*gari*) and bead making.

Approach: Around sixty women were trained on these interventions with initial funding from the Global Fund for Women, a non-profit foundation funding women's human rights initiatives.

Successes/Failures: Initial challenges in getting the women to participate in these programmes. The reason was simply because they were used to fish processing as the only livelihood passed on to them through generations and were unwilling to learn or switch to any other.

The second challenge was with funding. Although the association sought funds from other sources such as the District Assembly, these were not forthcoming and the programme came to an abrupt end.

Intervention 2: Enrolment of the children of fish processors for free in primary schools

Approach: Children of migrant fishers placed in a private school owned by CEWEFIA from pre-school to lower primary (ages 4 to 10) free of charge.

Successes/Failures: Successfully kept younger children of fish processors, especially the girls, away from joining the fishing activities.

Organisation:

Development Action Association (DAA)

Intervention 1: Soap making, selling firewood for processing, farming and livestock rearing.

Approach: Training of fish processors to adopt these interventions as a supplementary livelihood to fish processing.

Successes/Failures: The major challenge was the lack of interest from the fish processors. However, the few who held an interest were able to adopt rabbits and grasscutter farming in their homes as a supplementary livelihood, spending more time on this than fish processing, especially in lean fishing periods.

Intervention 2: Oyster farming in the Densu Estuary, Greater Accra Region

Approach: Introduced women to oyster collection and farming in the Densu estuary.

Successes/Failures: The women have now been mobilised into an association – the Densu Estuary Women Oyster Pickers Association (DOPA) – and have come up with their own management strategies such as closed seasons.

Organisation:

Western Region Coastal Foundation (WRCF)

Intervention: Interventions rolled out for fishing communities, especially those impacted by oil and gas activities. These interventions include aquaculture (tilapia and catfish farming) and climate smart agriculture.

Approach: To inform the choice of interventions, the WRCF carried out an assessment of fishers in Western Region, with aquaculture coming fourth in ranking out of 16 alternative livelihood interventions (real estate business and petty trading came out top).

Successes/Failures: Around 15 fishers have since been trained in fish farming. A major challenge has been the lack of capital on the side of the fishers, and hence the inability to continue with farming after the training. The WRCF therefore needed to seek other ways of sustaining the intervention.

Constraints on land and fish feed all led to the increase in capital required for uptake of the intervention. Another challenge was the difficulty in securing buy-in of the fishers, as their nature as hunters meant they were disinterested in fish farming. The few who continued with farming were of the younger generation and new entrants into fishing, showing greater willingness to divert from fishing into other ventures.

Organisation:

Eni, an international oil and gas company with presence in Ghana and operators of the Offshore Cape Three Points (OCTP) oil and gas project

Intervention: Livelihood interventions for the people of Sanzule in the Western Region in an OCTP joint venture with the Ghana National Petroleum Corporation (GNPC) and the Vitol group. These interventions aim to secure the livelihoods impacted by OCTP activities in the region and include livelihood ventures such as crop farming, livestock rearing, aquaculture, poultry, cassava processing and soap making.

Approach: These have been chosen based on preferences from household surveys conducted for the purposes of the programme. Eni plans to provide all of the necessary start-up equipment, funding, training and capacity building for the individually selected ventures for each household.

Successes/Failures: No known or documented successes/challenges yet.



Workers move tilapia fingerlings from a pond at Tropo farm in Akuse, Ghana.
Photo credit: ILRI/Paul Karaimu (CC BY-NC-SA 2.0)

Organisation:

The Wildlife Division of the Forestry Commission of Ghana, Winneba

Intervention: Grasscutter rearing and snail rearing.

Approach: Alternative livelihood interventions were started as a way of getting the communities around the Ramsar site to buy into the idea of conservation, when the Ramsar initiative was introduced. Community members, including fishing communities and fishermen, were trained on these interventions. The idea for fishermen especially, was for them to tend to the snails/grasscutters in the afternoon upon returning from sea, and over time partake in this as their full-time activity.

Successes/Failures: Good successes had been reported in the grasscutter rearing, where some community members now actively engage in this activity and no longer enter the forest to hunt grasscutters. However for the fisherfolks, there had been more failures than successes. Although snail keeping was successful with the communities inland, it resulted in very limited success with the fishing communities. The close proximity to the sea was the major contributing factor to this failure, as the high salinity affected the survival of the snails. For grasscutter rearing, the fishing community decided to do a group start-up after the training. This, however, was not successful due to issues surrounding the leadership of the group which resulted in the collapse of the entire initiative.

Organisation:

Ministry of Fisheries and Aquaculture Development (MoFAD)

Intervention: At the national level, the Alternative Livelihood Committee of the MoFAD has proposed two main livelihood interventions for introduction and adoption in fishing communities. These are plastic recycling and salt iodization, which are the outcomes of an assessment of fisherfolks along the coast. The formation of the Alternative Livelihood Committee by the Ministry reflects the urgent need to reduce effort in the fishery.

Success/Failures: Preparations for the rollout of these interventions are currently ongoing.

Lessons from introduced livelihood options in the coastal regions of Ghana

Key lessons that may be drawn from alternative livelihood options introduced along the coast of Ghana include the following:

- Identify the target stakeholder groups for the intervention (e.g. boat owners, fishers, crew and fishmongers). This will make it easier to implement livelihood interventions and other strategies such as cash paybacks, and ensure that the impact of the intervention on the entire group/collective engaged in fishing is considered.
- Fishermen are naturally hunters and may resist alternative livelihoods that have significantly different characteristics or take them too far away from the water. More so, aside fishing being an economic venture, it has very deep social and cultural undertones. It is more of a lifestyle than a job. As such, planning alternative livelihoods must involve significant interactions and consultations with the fishers to decide which option would be most acceptable and suitable to them.
- It is necessary to ensure that fishers involved in livelihood interventions take ownership of the introduced projects. This will ensure sustainability once the funding body ceases its involvement. One way of approaching this is seeking fishers who are willing to invest partially in the intervention. Once they are committed, they would have more interest in sustaining it once the funding body or project comes to an end.
- Livelihood interventions should target new entrants into the fishing business, or the younger generation involved in fishing. These individuals will be more likely to adopt interventions than the elderly who have spent their entire lives fishing.
- Livelihood interventions should be targeted to specific areas. This will involve identifying specific needs and resources available to each area, to ensure maximum outputs. A case in point is the introduction of fishermen to rubber cultivation in the Nzema, Agona and Jomoro districts of the Western Region. This has been possible as a result of available land in the region. Fishers have been attracted to the benefits from the plantations and alternate this work with fishing.
- Interventions should be planned on a medium to long term basis. Fishers should be given training in the necessary skills at an early stage and the option promoted as a secondary livelihood over a sustained period of time.
- Many of the fishers in the country are natural producers and not suited to jobs in industry. Therefore, with sufficient capital and land available, a more appropriate alternative livelihood would be farming/putting land to good use. In the absence of land, climate-smart agriculture initiatives can also be explored, which incorporate measures to farm sustainably, increasing productivity and income while reducing greenhouse gas emissions as much as possible. An example is the farming of organic vegetables in sacks, which is being piloted by the WRCF.
- Although it has not yet been introduced in the country, mariculture was seen as a kind of livelihood programme, which would be more appealing to fishers in view of its direct link to the sea. However, this would involve considerable investment, research and piloting before becoming operational.
- Another livelihood intervention seen as more viable was the cultivation of hybrid coconut species, which are resistant to diseases. As coconuts thrive on the coast, fishers would not need to move far to engage in this. In addition, as every part of the coconut can be used, this could result in significant benefits.
- When introducing or rolling out alternative livelihood interventions, it is important to begin with a pilot project. A recommended approach is to implement a number of model interventions in a single community or fishing village, provide the necessary training and support over time, and observe how the models develop. Once the different models have been assessed and compared, for example in terms of profitability and sustainability, another village can be adopted, and the process repeated.
- It is critical to ensure that the children of fishers receive appropriate training and that their skills are developed, to reduce dependency on the fishery resource.

A review of introduced fisheries livelihood and management programs in the Philippines revealed similar lessons as mentioned above⁴⁴. Significant among them are the following:

- Livelihood programmes should be based on an assessment of current and desired livelihood strategies, the needs of households and their assets, and consultation with beneficiaries.
- Existing livelihoods should be enhanced rather than developing new livelihoods.
- The private sector should be consulted and involved in introducing livelihood interventions.
- Low capital and low maintenance livelihoods should be prioritised.



Children at a fish landing beach in Volta Region.

Fisher perspectives on the state of fishing and willingness to engage in alternative livelihoods

The below sections present the results of the focus group discussions and key informant interviews held with stakeholders in the artisanal fishing sector.

State of fishing

In consonance with recent literature and assessments, over 90% of fishers interviewed for this study alluded to the bad and declining state of the fishing profession, characterised by low catches, with its attendant impacts on their income. Around 80% of fishers reported making losses in their current fishing business (**Figure 2**). Fishers stressed that in the past it was not necessary to travel far to get enough fish for a good harvest. Likewise, fish processors expressed how, in the past, it took several days to process the catch from one fishing trip due to the abundance of fish.

Fishers gave varied reasons for the decline in fish catches (**Figure 3**). These included the use of illegal fishing methods such as fishing with light, monofilament nets and small mesh sizes, as well as the use of chemicals and dynamite in fishing. Many fishers also blamed Chinese-owned industrial trawlers and the associated practice of trans-shipment, commonly referred to as 'saiko', for their woes. Among other reasons cited were the high cost of fishing inputs and the realization that, at present, there were too many fishermen.

“When I started fishing you could see fish right at the shore. Now our fishing business is so bad, due to the big China trawlers who sleep all day and night in the sea. Our fellow Ghanaians are also using bad methods for fishing, making us go into so much debt since there is no fish.”

– Canoe owner, Moree

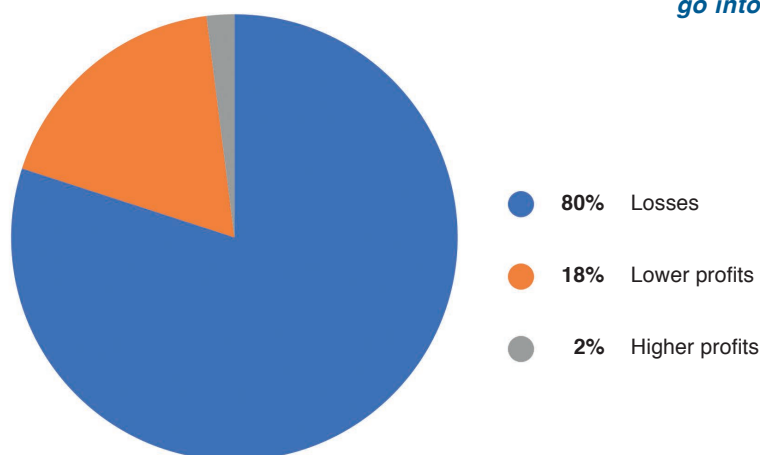


Figure 2: Current state of income from artisanal fishing

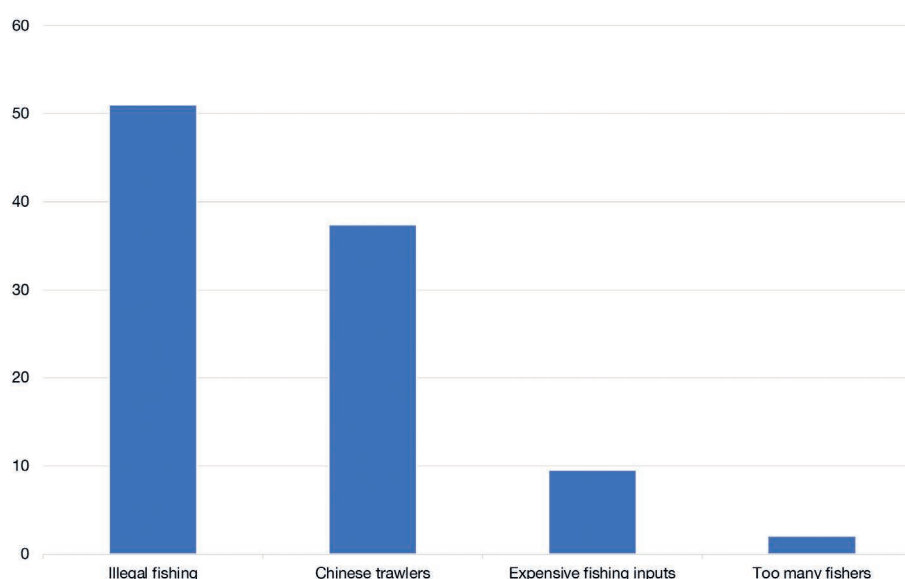


Figure 3: Reasons put forward by fishers for the declining state of the fisheries

Willingness of fishers to engage in alternative livelihoods

The willingness of fishers to engage in alternative livelihoods is the first step in the process of any livelihood intervention. Almost 90% of respondents we spoke to expressed an interest in having an additional job to supplement their fishing activities in light of declining catches (**Figure 4**). While the vast majority of respondents were not prepared to leave the fishing industry entirely, with current levels of losses, they see a need to supplement their income from fishing with income from other sources. Although this would not reduce immediately engagement in direct fishing activities, it is expected that the time available for engaging in fishing activities would reduce over time, and gradually some may leave the fishing business altogether when their alternative livelihoods are prospering. This was evidenced in the responses of some fishers, who commented that livelihood options that would bring them more income would be more satisfying and help them to leave fishing entirely. This is consistent with the research by Cinner *et al.* (2009) and Cobbina (2018) who found that fishers with more livelihood options available to them are more likely to exit a declining fishery⁴⁵.

Other respondents noted that although they would be willing to have additional jobs to supplement their fishing business, there were no options available as they lacked the necessary skills, or were too old to learn the skills required for alternative jobs. Meanwhile 12% of respondents stated they would not be willing to engage in any other job except fishing, largely for the reason that this was all they knew and had learnt to do. For these respondents, in view of their age and academic level, they felt it would be difficult to learn new skills in order to adopt an additional or alternative livelihood. They would rather the government and regulating bodies put a stop to illegal fishing, especially the illegal activities of the industrial trawlers. This they believe would help to rebuild fish stocks and improve their livelihoods. More than half (56%) of fishers interviewed had been fishing for over 30 years, with some saying that they had seen good times and were hoping for a turn around.

For the majority (78%) of fishers, the profession had been passed down to them through generations, and there was a desire for some to ensure the family tradition continued with their children, nephews and nieces. Others, however, were of the view that breaking the generational nature of fishing as a livelihood would help reduce effort in the sector. As such, they wanted to send their children to school or support them to learn new trades and other skills, which would reduce their dependency on the sea. Of the respondents interviewed, around half had not had any formal education, with an additional third ending their formal education in primary school. The majority of respondents attributed their current woes to their lack of education and were therefore eager to push their children into school. This finding is consistent with a study by Cobbina (2018) who found that many fishers would rather enrol their children in school than allow them to fish, presenting an opportunity to control fishing effort by engaging children in fishing communities before they enter the fishery.

“I wish I could channel into other options, but there is nothing else I know how to do”

– Canoe owner, Senya Beraku

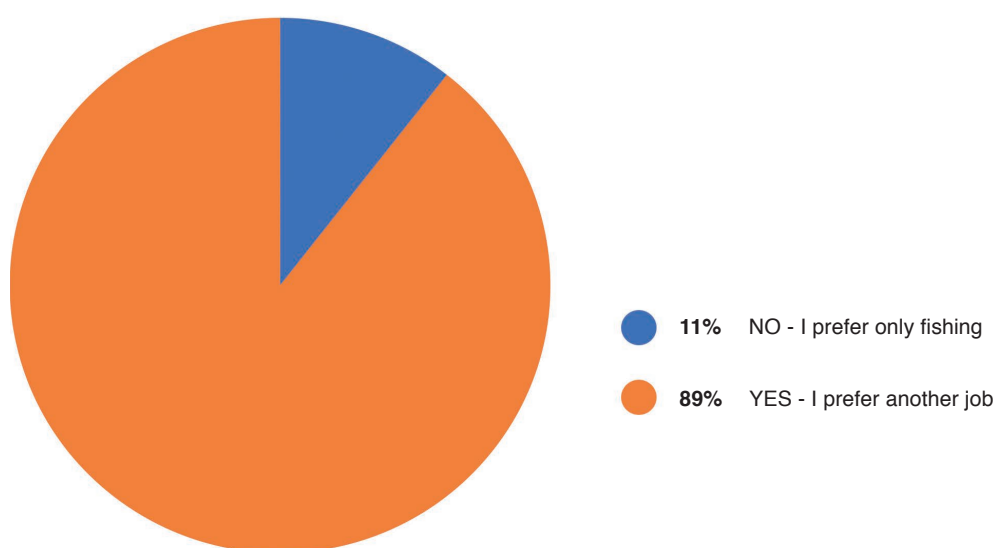


Figure 4: Willingness of artisanal fisherfolk in Central Region to engage in an additional job to supplement their fishing activities

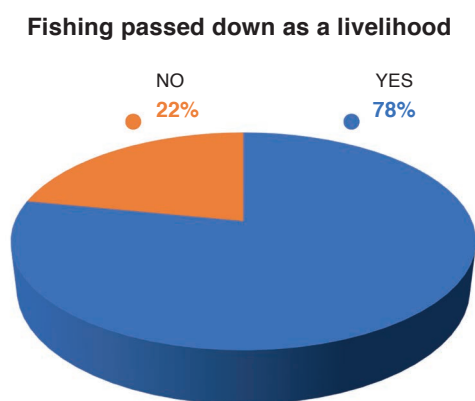
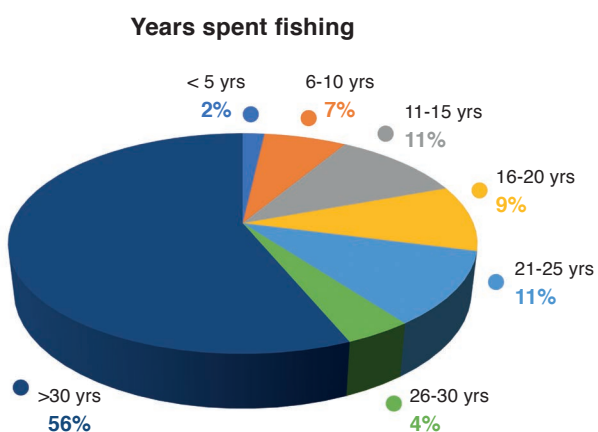
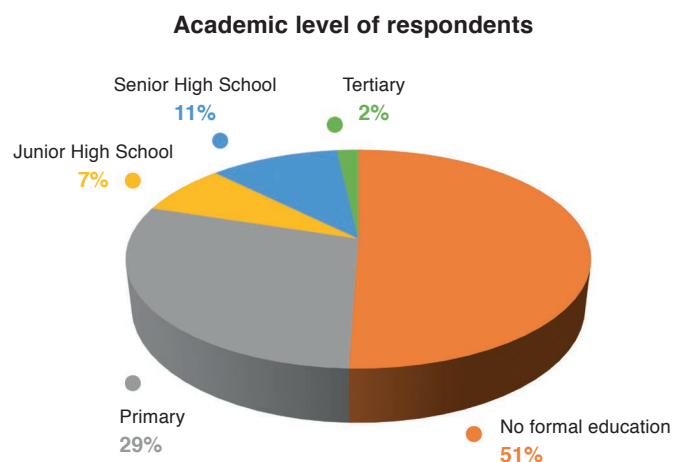
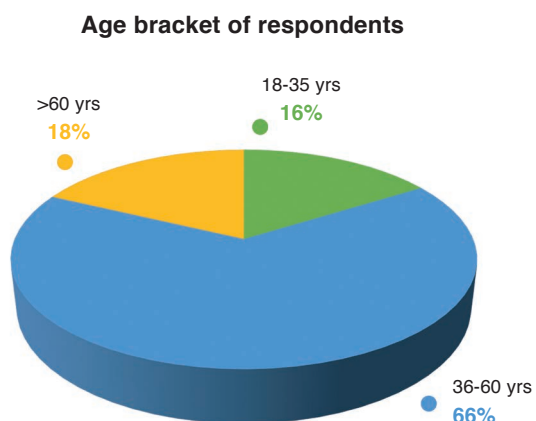


Figure 5: Demographics of respondents



Canoe fishers in Ghana's Central Region.

Preferred alternative livelihood options

When asked about their preferred options for alternative livelihoods, 20 different livelihoods were identified. These ranged from crop farming to livestock rearing, petty trading, real estate, and baking. Of these, farming in various forms stood out as the most preferable alternative livelihood, with crop farming and livestock rearing mentioned in 24 out of the 25 engagements. Of the farming-related livelihoods, crop farming ranked highest, followed by pig farming, poultry farming, and rearing of other livestock.

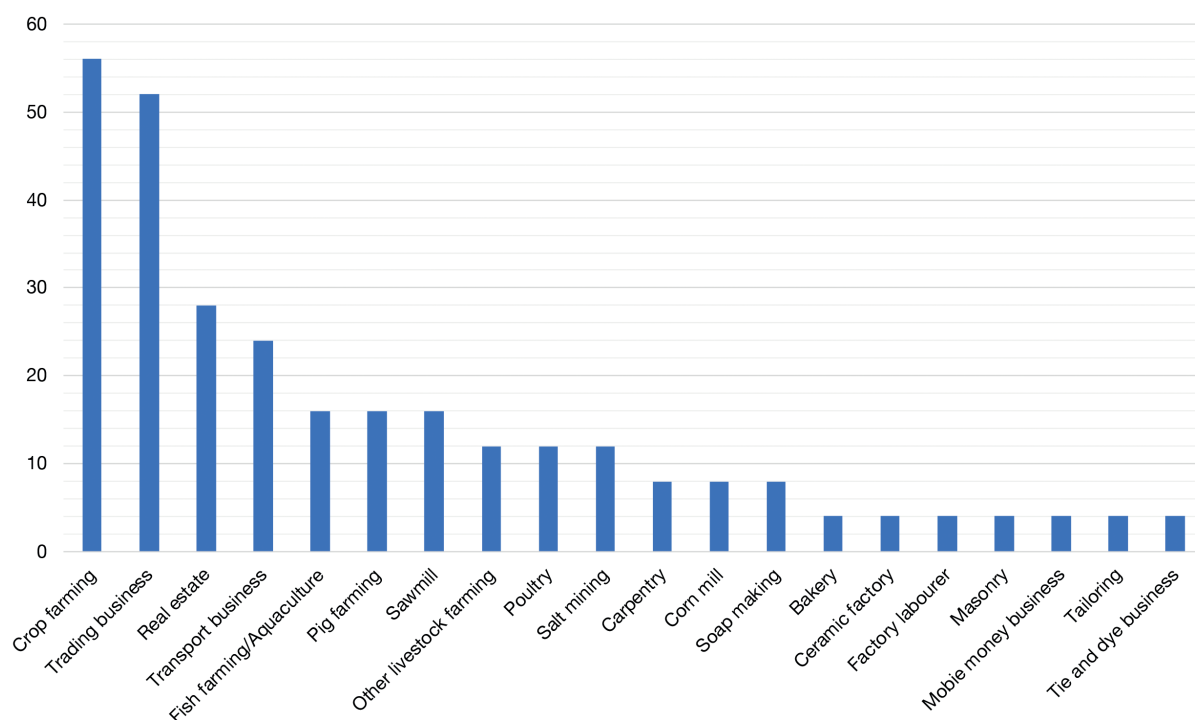


Figure 6: Alternative or supplementary livelihood preferences of artisanal fisherfolk in the Central Region

(i) Crop farming

Crop farming stood out as the preferred alternative or supplementary livelihood in over half of the engagements, confirming this as the livelihood option that is most likely to be accepted in the face of declining fisheries.

This may be attributed to the low skills involved in crop farming, an activity that continues in many rural areas as a subsistence livelihood, and to the availability of land as an inheritance. This finding is not surprising as previous studies have described farming, in general, as one of the alternative income-generating activities that communities resort to when fishing becomes restricted in tropical countries⁴⁶, especially where land is readily available as a resource. Crops suggested for farming include cashew, coconut, pineapple, sugar cane, maize, palm and cocoa.

Technical/training requirements

The study revealed that many of the respondents who had an interest in crop farming already had the technical knowledge for farming as well as land available. However, some were of the view that to improve the income-generating potential of agriculture as an alternative livelihood it needed to be on a larger scale and/or employ new methods of production, for which some additional training would be required.

An example was provided by fishers of the Kafodzidzi fishing community in the Komenda-Edina-Eguafo-Abirem district. The fishers noted that two methods of pineapple cultivation were currently practised – the traditional method and a modern method involving the use of plastic lining. They explained that the method involving the use of the plastic lining was not known to many of them but resulted in higher harvests. Likewise, coconut farming was recognized as one of the most profitable cash crops available. However, current production was relatively low, and fishers were hopeful that varieties resistant to diseases could help to improve production.

In Senya Beraku, a fishing community in the Gomoe East district where maize farming is already in existence, fishers requested training and technical assistance on mechanized maize farming and improved irrigation mechanisms to boost production. In the Otuam beach seine fishing community in the Ekumfi district, fishers desired technical equipment such as tractors for large-scale vegetable production.

Entry costs

According to respondents, the entry costs for farming range from GHS 1000 to GHS 40,000. This includes the cost of land, in cases where fishers do not already have access to land, labour, and farming inputs, such as herbicides and pesticides. For new farming techniques, such as modern methods of pineapple production, fishers were unable to give any estimate of entry costs as this was an unknown area to them.

Economic benefits and marketing opportunities

Many of the respondents were of the view that farming, particularly if using modern methods and at a large scale, could result in significant economic benefits for coastal communities, as there is a ready market for the crops cultivated. In Kafodzidzi, for instance, fishers were emphatic that they had a large market for coconuts, and that people came from all over the Central Region and even Accra to buy coconuts from their town. They were therefore hopeful that with the introduction of varieties resistant to diseases, coconut farming would be very lucrative.

However, in other areas, due to the subsistence nature of crop farming, farmers considered the economic benefits to be fair rather than significant. Some attributed the limited market and low profits associated with cultivated foodstuffs to the fact that people in the local area would often borrow produce and fail to pay for it, causing losses for the farmers involved. In Abandze, fishers noted that cashew nut was a potential cash crop, but with a limited local market could only secure economic benefits if sold outside of town, preferably in Accra. This and other examples provided by respondents highlight the need for measures to connect localities of production to market to ensure farming is profitable and can be sustained.

Problems/challenges

Fishers cited challenges such as lack of capital, pest attacks and lack of rain as common hindrances to the uptake of farming as an alternative livelihood. The respondents explained that as most of their capital base is from fishing activities, and with fishing in decline, they are unable to put together the capital necessary for any other venture. Pest attacks, such as that of the Fall Armyworm which plagued the country in 2017 and 2018, destroying most of their crops, especially maize, was also a major concern, requiring higher investments in pesticides and an increase in entry costs for most fishers where capital is, in most cases, already lacking.



Project mobiliser interacts with fisherfolk during a focus group discussion at Brenu Akyinmu.

(ii) Livestock agriculture

Livestock agriculture has become increasingly popular as an alternative or supplementary livelihood for fishers, and in particular the farming of pigs and poultry. In this study, poultry and pig farming, as well as other livestock rearing, were mentioned in over 40% of the total engagements. Other types of livestock agriculture mentioned by fishers included mainly goat, sheep and cattle rearing.

Technical/training requirements

As in the case of crop farming, livestock rearing is usually a subsistence activity, undertaken as an additional form of income by most fishers. As such, most respondents already had the technological know-how needed for livestock agriculture. For the few who lacked this knowledge, they were willing to learn from those already engaged in such activities in the community. On the other hand, respondents acknowledged that they lacked the technical know-how required when it came to large-scale livestock production.

Fishers were of the view that pig rearing was easier than other forms of livestock rearing and also highly profitable. It was therefore popular among fishers as a supplementary livelihood. Most fishers indicated that they had experience in rearing these animals in a small scale and extensive way. Expanding pig rearing to a larger, more intensive scale would require more inputs such as land, sheds, feed and capital.

Entry costs

Fishers estimated entry costs in the range of GHS 500 to GHS 20,000 to cover the land, fences, sheds, initial stock and costs of veterinary care to venture into more intensive methods of livestock rearing. Around 10% of respondents did not have any idea of the entry costs for livestock rearing as an alternative or supplementary livelihood.

Economic benefits and marketing opportunities

Despite the start-up costs, respondents were positive that livestock rearing had the potential for significant economic benefits. Poultry farming, for example, would result in benefits from the sale of both the birds and eggs. For pig farming, one sow could produce a minimum of six piglets up to three times, with each piglet selling for around GHS 400. Sale of these livestock was noted to be relatively easy as there was a ready market, both from individuals and food establishments. Higher sales and increased profits were also expected during festive seasons.

Problems/challenges

According to respondents, the major problem associated with livestock rearing was the risk of disease, such as swine flu, bird flu and coccidiosis. Fishers were, however, quick to add that with proper veterinary care these diseases could be prevented. Fishers also cited the shooting of pigs by the municipal assemblies as one of the challenges they face in livestock rearing. This occurs in cases where pig farms are run on an extensive or semi-intensive basis (i.e. pigs may stray into public areas and be considered a nuisance), thus the need for an intensive form of rearing, which comes with larger capital investments.

(iii) Trading

The next livelihood option preferred by fishers was trading, mentioned in just over half of the total engagements. This ranged from petty trading, primarily in groceries, to trading in fishing inputs. **Figure 7** shows the varied options proposed by respondents.

Technical/training requirements

Around 80% of respondents indicated that there was no need for special training to engage in the trading business. With the exception of footwear trading, fishers indicated they already had the requisite knowledge in their trading business of interest.

Entry costs

Estimated entry costs for trading depended on the type of business and ranged from GHS 3000 to GHS 200,000. This would cover the initial cost of purchasing items and inputs to start trading and, in some cases, the cost of land and structures for housing items for sale.

Economic benefits and marketing opportunities

Expected economic benefits from trading activities were variable. Respondents explained that although many of these trading options could result in significant profits, the state of the market was linked closely to the state of fishing activities in the community. As the products were destined primarily for local markets, higher profits could be expected when fish catches were good, while losses could result during periods of no catch. Some respondents were of the view that to ensure a reliable income from the trading business, they would need to access markets outside of the main town or community.

“Trading in building materials is marketable, but more at the junction of the town. Those within the town depend on the fish so when fishing doesn’t go on well, it becomes problematic to make any profits”

– Canoe owner, Winneba

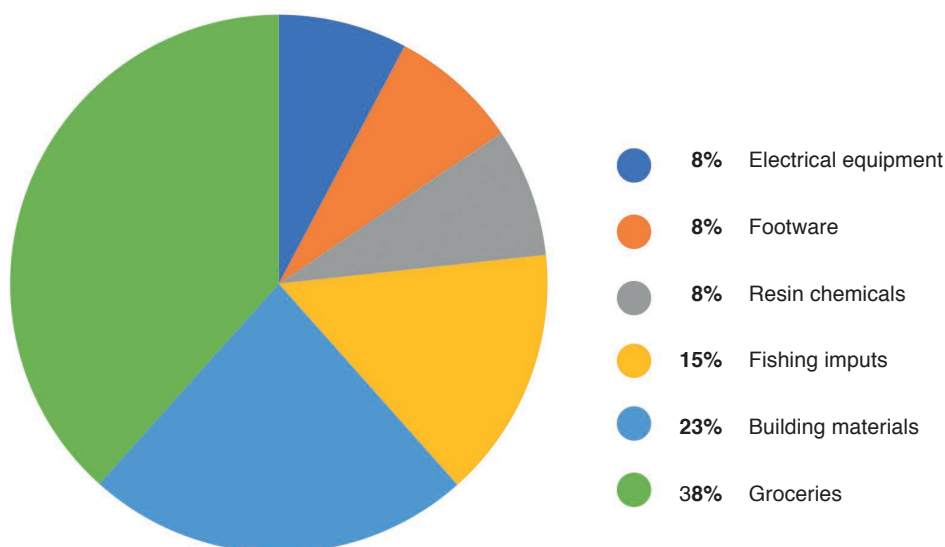


Figure 7: Trading business options proposed by respondents

The 15% of respondents who were interested in trading in fishing inputs were confident of the high marketability of their products in the fishing communities, although accepted that the profitability of the venture would depend on the state of fishing.

Problems/challenges

The major challenge of this kind of livelihood relates to the prevailing social norm in most communities, where it is very easy for one to borrow from his or her neighbour for long periods of time before or without ever paying. This is an issue especially for those that trade in groceries. The other challenge relates to the profitability of businesses linked to the state of fishing activities in communities. With fisheries resources in steep decline, many fishers recognised that this would not be an appropriate alternative or supplementary livelihood unless fishing improved. Other challenges mentioned included loss of items from theft.



EJF programme officer interacting with fishers at Cape Coast.

(iv) Real estate business

Another livelihood option preferred by fishers was the real estate business, specifically the building of homes for rent, which fishers believed to provide immediate and significant economic gains.

Requirements

The most important requirement for this kind of venture was identified as land. Most of the fishers with this interest already had land available for building. For the building works, they were of the view that it would be the work of artisans, which were readily accessible in their communities. Other fishers had expertise in building and were confident that they could erect a building with the help of friends and crewmembers at lower cost.

Entry costs

Entry costs for this kind of venture were very high, due to the costs of building materials and payment for labour, depending on the type of building and number of rooms desired. Fishers estimated entry costs in the range of GHS 20,000 to GHS 300,000.

Economic benefits and marketing opportunities

Fishers were optimistic that this was an economically rewarding venture, as the markets were good. In some communities, it was purported that prospective tenants would sometimes make payment prior to completion of the building works in order to secure rooms. In fishing communities in Winneba, fishers intimated that real estate was in high demand due to the presence of the University of Education and, as such, they intended to invest the little money they make from fishing into building houses to rent to students.

Problems/challenges

The major challenge identified with this kind of venture was the issue of non-payment of rent by tenants.

(v) Transport business

This form of business involves the commercial driving of vehicles, to carry passengers, fish and other market produce. Most fishers were willing to operate the vehicles themselves with the necessary training. For fishers, this livelihood offered an assured profit for the relatively low skills required.

Requirements

Around 80% of the fishers interested in the transport business did not know how to drive or own an appropriate vehicle. Preferred vehicles for this purpose were mainly saloon cars, which would be operated as taxis.

Entry costs

Around half of respondents had no knowledge of the entry costs for this kind of livelihood but were able to indicate that these would involve the cost of the vehicle, the cost of training as a driver and completion of licensing and registration. For those who were able to provide estimates of these, entry costs ranged from GHS 20,000 – GHS 100,000.

Economic benefits and marketing opportunities

Fishers consider that the transport business can accrue significant economic benefits and a secure income. Due to the fact that the vehicles can be used to serve regular passengers, as well as transport fish from the beach, higher returns were expected when fishing activities are good.

Problems/challenges

Challenges anticipated include the bad nature of the roads, which may result in cars quickly becoming damaged and the resulting expense of acquiring spare parts. However, fishers expect that benefits would exceed costs over time, especially with regular maintenance of the vehicle. High fuel prices were also a disincentive as this would cause profit margins to fall.

(vi) Aquaculture

Although aquaculture is often put forward as a livelihood that would be easily accepted by fishers, only 16% of fishers in this study had an interest in aquaculture as an alternative or supplementary livelihood. This was due to the technical requirements for the aquaculture business and important differences from capture fishing in several respects.

Requirements

Around a quarter of respondents had knowledge in fish farming (specifically tilapia and catfish farming) and were willing to teach other fishers. This knowledge had been gathered over years of engaging in fish culture outside of the fishing community. The remaining respondents had only heard about fish farming and did not have any knowledge of the technical requirements but were willing to learn. In the Moree fishing community, fishers indicated that the District Assembly through the MoFAD and Fisheries Commission had initiated talks with interested fishers to be trained on fish farming, however the training was yet to start.

Entry costs

Although lacking technical knowledge about this livelihood, the fishers agreed that it was an expensive venture. Estimated entry costs were in the range of GHS 50,000 – GHS 100,000.

Economic benefits and marketing opportunities

The respondents were confident this kind of livelihood would be highly profitable and that fish could be marketed to schools, hotels and individuals, within and outside of the community. Given that fishing communities are highly dependent on fish as a source of protein, fishers believed that production from fish farming could make up for lost catches, with a ready market available and good potential for economic gains.

Problems/challenges

Since they did not have much knowledge about the livelihood, the fishers rightly indicated that they did not have any knowledge of the problems that may arise from such a venture. A few of the fishers proffered that lack of drugs (probiotics) to help fish to grow stronger could be a challenge.

(vii) Sawmill

A sawmill is simply a facility where logs are cut into lumber. This usually involves the use of motorized saws to cut logs into standard or custom sizes. When suggesting engaging in sawmill-related activities as an alternative or supplementary livelihood, fishers indicated their desire to have their own sawmills and to trade in wood, especially for building/repair of canoes in the fishing communities and for other purposes such as construction works.

Around 80% of fishers already had the knowledge to operate a sawmill but would require the necessary start-up inputs such as land for the siting of sheds for the operation and saws. These, together with the cost of transporting lumber from the forest regions, resulted in estimated entry costs in the range of GHS 30,000 – GHS 80,000.

Fishers highlighted the ready market for wood products, especially among the fishers themselves. Fishers from Otum and Winneba, for example, indicated that there was no sawmill in their communities and that the communities would depend on a new mill for wood for canoe repairs and other building activities instead of travelling outside of the community.

The main challenge cited by fishers for this kind of venture was the high cost of transporting wood from forest areas to the communities, which could reduce the income from the venture.



Hook and line fishers at Mumford with EJJ programme officers after focus group discussions.

(viii) Salt mining

Another livelihood identified as acceptable to fishers was salt mining. This involves the pumping of seawater into specially created salt ponds to allow for evaporation and collection. Fishers who showed an interest in this livelihood described it as one that could employ significant numbers of their fellow fishers as labourers. Although they had some knowledge of salt mining, they did not have the technical knowledge for commercial production. Overall, around half of fishers had some level of technical knowledge in salt mining.

Estimated entry costs ranged from GHS 30,000 – GHS 500,000. The fishers were confident of a ready and available market for the salt produced as well as very high economic benefits. The major challenge identified was the inability for work to function effectively during rainy seasons. However, they were optimistic that with the right training, measures to maximize outputs could be put in place during such times.

(ix) Soap making

Soap making was the major alternative livelihood option suggested by the fish processors interviewed during the study. Around half of fish processors had basic knowledge of traditional methods of soap making, while the rest did not have any knowledge but were willing to learn. The motivation for this livelihood was the ready market that could ensure high economic gains. However, respondents had no knowledge of the entry costs or any problems or challenges this venture could pose.

(x) Cornmill

Engagement in cornmill-related activities was suggested by around 8% of the fishers interviewed. This livelihood would involve fishers setting up a shop and operating a milling machine, for the purposes of milling maize and other forms of grains or vegetables. The fishers indicated that they already had the technical knowledge to operate a cornmill, and requirements for the venture were land on which to situate a shop and the purchase of a milling machine. Estimated entry costs ranged from GHS 10,000 to GHS 15,000. Fishers were optimistic this venture would yield high economic benefits as most of the community members depended on maize as a staple diet. Challenges identified related to the erratic supply of electricity in some communities.

(xi) Carpentry

Another 8% of respondents suggested carpentry as an alternative or supplementary livelihood. Fishers considered carpentry to be appealing to the younger generation, and a skill that could engage young men in the community to prevent them from fully depending on the fishery as their only source of income. Some fishers were already engaging in this livelihood on a small-scale to supplement their fishing activities and were willing to expand to teach interested fishers or other individuals from the community. Fishers had good technical knowledge of the requirements for carpentry and mentioned materials such as land, sheds and start-up tools as the requirements. Entry costs were estimated to be in the range of GHS 800 – GHS 10,000. Fishers were confident that this was a very profitable venture and there existed a good market within their communities. The challenges envisaged included difficulties in marketing furniture that had already been made, as sometimes customer preferences would differ from manufactured items. It was therefore preferable to make custom items of furniture on request of the customer.

(xii) Masonry

Masonry was proposed mainly by the older generation of fishers interviewed as an appropriate alternative livelihood for younger men in the communities to reduce dependence on fishing. They were optimistic that it would be economically beneficial in view of the high rates of building activities in the communities. Fishers considered the masonry trade as easy to access and learn through apprenticeship, with estimated entry costs at around GHS 3,000. One challenge cited was the difficulty in acquiring a lump sum of money from such a livelihood, as people often paid for services on a piecemeal basis. Therefore, profits, although a surety, could be slow in coming.

(xiii) Tailoring

Respondents considered tailoring as a potential economic venture for younger generations of fishers, with a ready market. Some fishers intimated that although there were tailors in their communities, none of the fishers were engaged in this. While fishers did not have the technical knowledge required for tailoring, they considered the skills could be easily acquired through an apprenticeship with existing tailors in the community. The entry cost for this venture was estimated at around GHS 2,000. The major challenge identified was the lack of capital to start a tailoring business.

(xiv) Baking

Fishmongers suggested baking as an acceptable livelihood option. This stems from the fact that bakery also involves some form of fire or heat, which the processors are used to in their activities. Fish processors intimated that baking could be done as a supplementary livelihood and could afford younger women an additional skill, so as to reduce dependency on fish processing alone as a livelihood. Due to the nature of baking, most of the women already had the technical knowledge and gave an estimate of the entry costs as around GHS 5,000. They were optimistic that baking was of high economic value and had a good market especially in seasons when there was an abundance of fish. On the other hand, the major challenge with this venture was a lack of market during seasons when fishing activity was low, as people would have less money to spend.

(xv) Tie-dye business

The tie-dye fabric making business was more popular with the fish processors than fishers. Fish processors saw it as an economically profitable livelihood with good market potential but had no knowledge of the technical requirements or entry costs involved. They also had no knowledge of the problems or challenges associated with the venture. Fish processors in Senya Beraku noted that tie-dye fabrics were brought from Accra to be sold in their community and were therefore optimistic of the market for fabrics produced in the community.

“The tie-dye business would be very beneficial for our young women. This is because they bring these from Accra to sell here, thus if it is made in the community, it will yield much profit”
– Fish processor, Senya Beraku

(xvi) Mobile-money business

In some of the smaller fishing communities located further from the major urban centres, respondents proposed livelihood options related to the daily influx of people from the larger towns. In the Kotankore fishing community, respondents observed that processors and others who came into their town to buy fish on fishing days would often run out of cash and have to move to another larger community for their transactions. Thus, a mobile-money business centre would serve as a good alternative or supplementary livelihood for younger fishers who were not yet deeply rooted in the fishing business. With the exception of irregular interruptions from the operating networks, no other challenges were foreseen, and this business could result in significant profits as a viable market had already been identified. The entry costs for setting up such a venture were estimated at around GHS 5,000.

(xvii) Factory hands

In light of limited skills for alternative or supplementary livelihoods, some fishers were of the opinion that the best livelihood option for all fishers would be the citing of factories in their communities, so they could work as factory hands whenever the fishing season was low. Factory jobs were considered to require limited to no skills and had no associated entry costs or foreseeable challenges.

Overview of alternative livelihood options proposed by communities

The study observed that the options for alternative livelihoods proposed by fisherfolk were to a large extent dependent on the resources available in the community concerned. In addition to the sea, most communities had other resources such as lagoons and farmland available to them, and these to some extent informed their preferences. For others, however, their only resource was the sea and proposed livelihood options were based on limited knowledge of activities that could be viable in the community.

Table 1 provides an overview of potential alternative or supplementary livelihood options for fisher families in Central Region, based on the options proposed by the communities. As noted above, the following factors were considered in analysis of each livelihood option:

- Available resources, such as land for farming
- Opportunities, including whether training can be obtained or skills are already present
- Estimated entry costs
- Profitability of the venture and whether there is a ready and accessible market
- If the challenges identified can be easily addressed.



Canoe fishers mend their nets at a landing beach in Ghana.

Table 1: Analysis of alternative or supplementary livelihood options for selected communities in Central Region

| Community | Gear | Available resource | Alternative livelihood option | Opportunities (e.g. training, capital, land requirements) | Estimated entry costs (GHS) | Problems/challenges |
|------------------------|-----------------|--------------------|-------------------------------|---|---------------------------------------|--|
| Mfantseman zone | | | | | | |
| Abandze | Purse seine | Farmland | Pig farming | Good knowledge as some are already in the business on a small scale | 500 | Swine flu disease |
| Anomabo | Set net | None identified | Masonry | Experienced masons in the community who can take up younger apprentices | 2,800 | Lack of capital Delay in receiving payment |
| Kotankore | Beach seine | None identified | Mobile money centre business | Fishers have good knowledge of business and requirements | 5000 | Irregular disruptions of the mobile network |
| Otuam | Beach seine | Land | Sawmill | Land available to build sheds. A few in the community have good knowledge of the technical requirements | No knowledge of entry costs | No known challenges |
| Biriwa | Fish processors | None identified | Soap making | No knowledge of this but are willing to learn. Ready market in local community. | No immediate knowledge of entry costs | No challenges foreseen |
| Cape Coast zone | | | | | | |
| Cape Coast | Ali net | None identified | Aquaculture | A few fishers with knowledge of basic fish farming (tilapia/ catfish) and can guide others | 50,000 | No challenges foreseen |
| | Beach seine | Land | Pig farming | Many fishers already engaged in small scale, extensive farming. Good knowledge of technical requirements | 20,000 | Swine flu disease. Shooting of pigs by municipal assembly due to extensive nature of farming (use of land) |
| Moree | Ali net | Lagoon | Corn mill | Good knowledge of technical requirements | 15,000 | Challenges with electricity and power cuts |
| | Boat owners | Land | Salt mining | A few fishers have started and can teach others the technical knowledge. However, extra training is required. | 30,000 | Rainy season which could prevent effective work |
| Ekon | Set net | None identified | Sawmill | Good technical knowledge. | 40,000 | Injuries during operation. High cost and logistics of transporting lumber from forest |
| Senya zone | | | | | | |
| Dago | Set net | Farmland | Farming (palm nut, onions) | Good knowledge of farming and land available | No immediate knowledge of entry costs | Lack of capital |
| Mumford | Hook and line | Farmland | Farming (coconut, cocoa) | Good knowledge of farming and available land | 40,000 | Lack of rainfall |
| Senya Beraku | Canoe owners | Land | Farming (mechanised) | Good knowledge of basic farming. Training and tools needed for mechanised farming. | No known knowledge of entry costs | Diseases such as Fall Armyworm. Lack of rainfall. |
| | Fish processors | None identified | Tie-dye business | No technical knowledge. Will require training. | No immediate knowledge of entry costs | No known challenges |
| | Hook and line | None identified | Trading business (groceries) | Good knowledge of trading | 10,000 - 15,000 | No challenges foreseen |
| Nyanyano | Drift gill net | None identified | Transport business | Fair knowledge of driving. Can easily access further training. | 10,000 | No challenges foreseen |
| | Hook and line | None identified | Petty trading | Good knowledge of trading. Land and store required. | 5000 | No challenges foreseen |

| Elmina zone | | | | | | |
|--------------------|-------------|-------------------------|------------------------------|---|---------------------------------------|---|
| Elmina | Purse seine | None identified | Salt mining | Good technical knowledge. Land needed to create channels. | 500,000 | Rainy seasons/times of rain which may disrupt work |
| Komenda | Purse seine | None identified | Poultry farming | Limited knowledge of technical requirements. Will require additional training. | 10,000 | Diseases |
| Brenu akyinmu | Set net | Farmland | Pineapple farming | Good knowledge of technical requirements. Need training on new/modernised technology. | 2000 | Weed infestations, making it labour intensive |
| Kafodzidzi | Ali net | Farmland, coconut trees | Farming (coconut, pineapple) | Good technical knowledge, however need resistant crop varieties for coconut. | 4,700 (coconut) 10,000 (pineapple) | Diseases (coconut), hence need for resistant varieties. Pests (pineapple), which can be easily prevented with pesticides. |
| Effutu zone | | | | | | |
| Winneba | Boat owners | None identified | Livestock farming | Good knowledge of technical requirements. Need for start-up equipment (land, sheds). | 2000 - 3000 | Diseases, which can be easily avoided with proper care |
| | Set net | | Real estate | No special training or technical requirements | 20,000 | No challenges foreseen |

Fisher perspectives on sources of finance for alternative livelihood options

In order to obtain information about the capital that might be available for implementing alternative livelihood options, fishers were asked about the cost of starting a fishing business for a completely new entrant to the fishery. Fishers provided information on the costs of starting a new fishing venture and daily expenditure on fishing trips. Estimated costs varied depending on the size and type of gear, and included the cost of the canoe, bundles of net, ropes, nails, food, etc. Summary ranges of the costs are represented in **Table 2**.

Table 2: Estimated costs of starting a new marine fishing venture and daily expenditure in the artisanal fishery

| Gear type | Cost of entry into the fishery (GHS) | Daily expenditure (GHS) |
|-----------------|--------------------------------------|-------------------------|
| Purse seine | 70,000 – 240,000 | 1,500 – 2000 |
| Set net | 50,000 – 150,000 | 110 – 2,000 |
| Beach seine | 50,000 – 100,000 | 100 – 400 |
| Ali net | 100,000 – 150,000 | 600 – 1,800 |
| Drift gill net | 100,000 – 120,000 | 1500 – 2000 |
| Hook and line | 15,000 – 50,000 | 200 – 1,600 |
| Fish processing | 6,000 – 10,000 | 100 – 2,500 |
| Boat owner | 100,000 – 160,000 | 1000 – 1200 |

When asked if, in light of the declining fishery, these monies could be channelled into other ventures and livelihoods, around 41% of fishers said they would be willing to channel funds into alternative livelihoods (**Figure 8**). These respondents noted that the fishery was in a bad state and, as such, given the significant sums involved in fishing, they would prefer to channel the funds into other ventures. The remaining respondents stated that they were not willing or able to channel these funds into other ventures. For these respondents, if given the same amount of money, they would prefer to reinvest it in fishing. This was primarily due to the fact that they were not familiar with ventures other than fishing, and their monies were safer invested there than in any other venture. They also explained that it was easier to see the returns on an investment in fishing in a short period of time, unlike other ventures, which may take a longer period to realise profits.

Overall, based on the responses, it appeared that fishers would be reluctant to finance any alternative or supplementary livelihood option solely from their own resources. Around half of respondents were, however, willing to finance up to 50% of the entry costs needed for their preferred livelihood option. Around 10% of fishers were not willing to part with any finances at all for their preferred livelihood option. External support from government and NGOs was suggested as an option for financing these livelihoods.

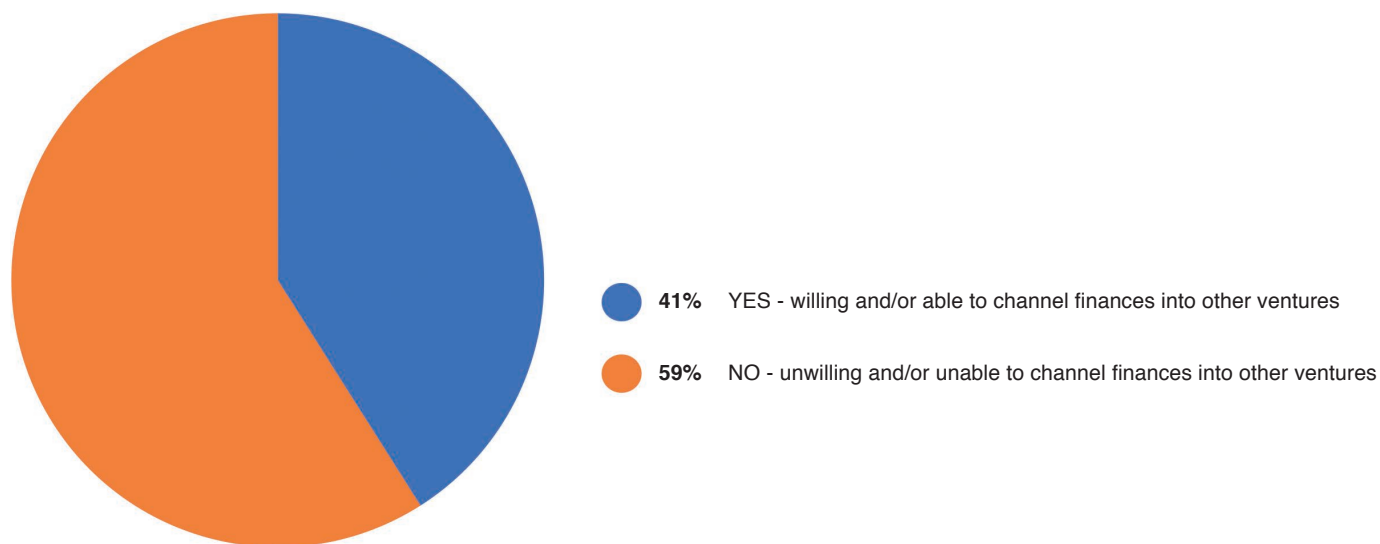


Figure 8: Channelling of fisheries start-up finances into other ventures

Although most fishers did not have good experiences with schemes that have existed in their communities, a number of them were willing to take up loans for their ventures. Over 65% of respondents indicated that they would be willing to take up loans for alternative or supplementary livelihood ventures; however, they would prefer for these loans to come from sources other than banks and savings and loans institutions which have set up in their communities. They claimed that it was either difficult to obtain loans from these institutions or they went into administration without refunding their savings. Of the remaining third of respondents who were unwilling to take up loans, around 10% preferred to start-up other ventures with their own capital using proceeds from their fishing activities, potentially taking a loan at a later stage when they needed to expand.

On the topic of Village Savings and Loan Associations (VSLAs), the study observed such associations operating informally in some of the communities surveyed, for example in Winneba and Dago, albeit with challenges surrounding their full and effective functioning. VSLAs are self-selected groups of persons who come together to mobilise funds for their personal and other needs. There was a general consensus that VSLAs were a good way of helping fisherfolk to save money for alternative livelihood options among themselves, however, the issue of trust was a major concern. As such, there was considerable work to be done in training communities on VSLAs, building trust between members and clarifying their operation and functions, for such associations to be useful in the communities.



Preparing fish at Gomoa Fetteh, Central Region.



Hook and line fishers unloading their catch at Elmina port.

5. CONCLUSIONS AND RECOMMENDATIONS

This study has reviewed non-fisheries livelihood options introduced in the coastal regions of Ghana, and drawn lessons from their successes, failures and challenges. The study has also gathered fisherfolk perspectives on a number of alternative or supplementary livelihood options, taking into account their entry requirements (costs, resources and training), economic and marketing opportunities and challenges associated with each venture. The study has further explored sources of financing alternative livelihoods as preferred by fishers.

A key challenge that many of the interventions have faced is an unwillingness or lack of buy-in on the part of fishers simply because fishing is what they know and have the skills to do. There has also been an issue of inadequate funding and fishers being unwilling or unable to continue with interventions after the programme which introduced the intervention has ended.

The study found that farming in all its forms was most preferable to fishers as an alternative or supplementary livelihood. This includes crop farming, and poultry, pig and other livestock rearing. Of the livestock rearing options, pig farming emerged as most preferable and economically rewarding according to fishers. Many fishers were also found to be engaged in farming on a small scale and were confident that an expansion to larger scale crop farming and more intensive livestock rearing could serve them well as an alternative livelihood. Farming was found to be particularly desirable as it demanded limited to no skills and land was readily available and accessible in many of the communities visited.

Other livelihood options which were desirable due to low skill requirements were trading, real estate and transport businesses. The study also found that although fishers were less interested in alternative livelihoods such as tailoring, masonry, carpentry and tie-dye fabric making, they were happy to have these running in the communities in order for the younger generation of fishers to learn skills other than fishing. Baking was found to be most desirable to fish processors as it involves contact with ovens and fires, which they are used to.



A fishmonger at Gomoa Fetteh awaits the return of the canoes at the shore.

In terms of financing alternative or supplementary livelihoods, fewer than half of fishers were willing to channel the funds which finance their fishing trips into these ventures. Many were unwilling to fully finance introduced livelihood options, but would consider contributing a proportion of the start-up costs. Fishers were also willing to take out loans for livelihood ventures, provided these came from reliable sources as a result of bad experiences with banks and institutions in their communities. Fishers were also welcoming of the idea of VSLAs but expressed the need for better education of the underlying principles to encourage understanding, trust and buy-in.

The study also observed that while fishers were often reluctant to leave fishing entirely owing to their age, limited skill set, generational inheritance and the rewarding nature of fishing despite declines in catches, they were welcoming to the idea of encouraging the younger generation of fishers to develop skills other than fishing. Likewise, they were especially insistent on sending their children to school to break the generational nature of fishing as a livelihood and dependence on the sea.

Based on these findings, the following are some recommendations for consideration in developing a sustainable livelihoods programme that aims to enhance or diversify the non-fisheries livelihood opportunities open to fisher families in the Central Region of Ghana:

- Alternative or supplementary livelihoods should be tailored to the specific needs and characteristics of individual fishing communities. This could be assisted by identifying leaders in the communities with an interest in promoting the introduced option(s).
- Scaling up existing livelihood options in the fishing communities will most likely have greater success than introducing new interventions. It is therefore helpful to identify existing livelihood options in each community, or fishers who are already engaged in one or more supplementary livelihoods, and assist them in scaling these up.
- Livelihood programmes should not be fully financed by the introducing body or project. Persons who are willing to commit some amounts of money to be met halfway should be targeted. This will ensure that interventions continue to run long after the financing body has exited.
- VSLAs can be used as a tool to organise fishers and fish processors in the communities to start up alternative or supplementary livelihoods and self-finance them.
- Projects can partner with credible savings and loans schemes to provide loans for fishers who are willing to engage in alternative or supplementary livelihoods.
- Introduced livelihood interventions should target the younger fishing generation. These individuals are easily found as crewmembers in larger fishing canoes and with gears such as the purse seine fishery.
- Introduced interventions could also target children and dependents of fishers as an indirect way of reaching out to fishers.
- Educational interventions in fishing communities should be encouraged, to help prevent children of fishers from entering the fishery and to break the generational dependence on the sea for livelihoods.
- Government should adopt alternative livelihoods as a policy in fisheries management.
- A monitoring and evaluation strategy must be applied to each introduced alternative livelihood to ensure its effective functioning.
- There is a need for a database of fishers and processors for easy identification and targeting of livelihood interventions.



A seamstress at work in Dzita, Volta Region.

APPENDIX A – INTERVIEW GUIDE

Interview guide for focus group discussions

As part of activities under the Far Dwuma Nkodo project, EJF is undertaking a study detailing the potential and alternative economic opportunities that can be undertaken by fishing communities, so as to possibly redirect coastal communities from sole dependence on fisheries to other livelihoods. There is generally a lack of knowledge about alternative livelihoods and few opportunities to reduce the pressure on fish stocks. For many artisanal fishers, fishing is seen as both traditional and the most important vocation. As a result of overcapacity in the artisanal sector among other factors, catches are steeply declining and there are poor returns on investments. However, many of these fishermen keep returning to the sea because they have no other livelihood options. This study will document and promote alternative livelihoods that contribute to income diversification.

1. State of the current fishing profession

- What do you think of the state of the current fishing profession in terms of profitability?
- Do you receive any government support/subsidies for your fishing activities?
- If yes, how beneficial are these subsidies to your fishing profession?
- Which other ways do you think these subsidies could be used to help your fishing profession?
- How much is needed on average to start a fishing business?

| Item | Quantity | Unit cost | Total cost |
|----------------------|----------|-----------|------------|
| Canoe | | | |
| Fishing Net | | | |
| Fuel | | | |
| Processing shed | | | |
| Processing equipment | | | |
| Firewood | | | |
| Outboard motor | | | |
| Floating cork | | | |
| Lead | | | |
| Rope | | | |
| Weaving rope | | | |
| Paddles/oars | | | |
| Anchor | | | |
| Anchor rope (10mm) | | | |
| Lamps | | | |
| Reflectors | | | |
| Bamboo | | | |
| Wood | | | |
| Sail | | | |
| Warning light | | | |
| Working coat | | | |
| Clot | | | |
| Generator | | | |
| Rings | | | |

- How much on average is required for your daily fishing activities?

| Item | Quantity | Unit cost | Total cost |
|-----------------------|----------|-----------|------------|
| Fuel | | | |
| Food | | | |
| Firewood | | | |
| Engine oil | | | |
| Pocket money for crew | | | |

- Do you think you could channel these funds into business ventures other than fishing?

2. A hierarchy of Alternative Livelihoods (AL) options

- Would you prefer to have another job to augment your income from fishing activities?
- What five alternative livelihood options are available for fishers in this community? (Mention in order of importance)
- What other livelihood options can you create for yourselves with the resources in your community aside fishing?

3. Livelihood requirements (Ref 2b)

a.

| Livelihood options | Technical/training requirements | Entry cost | Economic benefits | Marketing opportunities | Problems/ challenges |
|--------------------|---------------------------------|------------|-------------------|-------------------------|----------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

NB: Probe each option in the table with the following questions

- How much of the entry costs can you provide on your own?
- Which of the training/technical requirements can you provide on your own?
- For those you can't provide on your own, what do you think can be done?
- Which of these options offer a similar job satisfaction to fishing?
- What are some of the options that have been introduced in this community which failed?
- What would you say contributed to the failure of those ventures?

In-depth interviews

- What would you say about introducing alternative livelihoods to artisanal fishers?
- What do you think are some of the challenges to such initiatives?
- What is the way forward with this, especially regarding reducing effort in the artisanal fisheries sector?

4. Savings and loans initiatives

- Are there any savings and loans schemes in this community?
- Are you willing to take a loan as start-up capital for a preferred alternative livelihood option?
- If no, what other possible sources of financial assistance or support can assist you in these options?

5. Livelihood succession for children

- Do any of your children engage in fisheries activities?
- Would you want any of your children to continue with fishing?
- If no, what is your preferred option?

6. General

- So far, we have looked at a number of livelihood options available for fishers. Following this discussion, what would you say is preventing people from leaving fishing entirely to go into any of these?

APPENDIX B – DETAILS OF ENGAGEMENTS

Table 1: Breakdown of study areas for focus group discussions

| Number | Location/Fishing community | Fishing Gear |
|--------|----------------------------|------------------------|
| 1 | Kafodzidzi | Ali net fishers |
| 2 | Moree | Ali net fishers |
| 3 | Cape Coast | Ali net fishers |
| 4 | Kotankore | Beach seine fishers |
| 5 | Otuam | Beach seine fishers |
| 6 | Cape Coast | Beach seine fishers |
| 7 | Winneba | Boat owners |
| 8 | Senya Beraku | Boat owners |
| 9 | Moree | Boat owners |
| 10 | Nyanyano | Drift gill net fishers |
| 11 | Senya Beraku | Fish processors |
| 12 | Biriwa | Fish processors |
| 13 | Elmina | Fish processors |
| 14 | Mumford | Hook and line fishers |
| 15 | Senya Beraku | Hook and line fishers |
| 16 | Nyanyano | Hook and line fishers |
| 17 | Abandze | Purse seine fishers |
| 18 | Komenda | Purse seine fishers |
| 19 | Elmina | Purse seine fishers |
| 20 | Anomabo | Set net fishers |
| 21 | Dago | Set net fishers |
| 22 | Winneba | Set net fishers |
| 23 | Brenu Akyinmu | Set net fishers |
| 24 | Ekon | Set net fishers |

Table 2: Key informants interviewed during the study period

| Number | Institution/Community | Key Informant |
|--------|--|---|
| 1 | Ankaful | Madam Theresa Botwe, Konkohemaa |
| 2 | Gomoa Fetteh | Nana Obrenu Daboum III, Chief fisherman |
| 3 | Nyanyano | Nana Aful, Chief fisherman |
| 4 | Moree | Nana Kweigya, Chief fisherman |
| 5 | University of Cape Coast | Prof. Denis Aheto |
| 6 | Alternative Livelihood Committee, MOFAD | Mrs. Matilda Quist |
| 7 | University of Ghana | Prof. Wisdom Akpalu |
| 8 | Western Region Coastal Foundation | Mrs. Barbara Wahi |
| 9 | Alternative Livelihood Committee, MOFAD | Mr. Balertey Gormey |
| 10 | CEDECOM | Mr. Gabriel Fiatui |
| 11 | CEWEFIA | Mrs. Victoria Koomson |
| 12 | DAA | Mrs. Lydia Sasu |
| 13 | Ghana Wildlife Division, Forestry Commission | Mr. Andrew Agyekumhene |

Endnotes

- 1 Lazar, N., Yankson K., Blay, J., Ofori-Danson, P., Markwei, P., Agbogah, K., Bannerman, P., Sotor, M., Yamoah, K. K., Bilisini, W.B. (2018). *Status of the small pelagic stocks in Ghana and recommendations to achieve sustainable fishing 2017*. Scientific and Technical Working Group. USAID/Ghana Sustainable Fisheries Management Project (SFMP). Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. GH2014_SCI042_CRC, 22 pp.
- 2 Dovlo, E., Amador, K., Nkrumah, B. *et al.* (2016). *Report on the 2016 Ghana Marine Canoe Frame Survey*. Fisheries Scientific Survey Division of the Fisheries Commission, Ministry of Fisheries and Aquaculture Development. August 2016,
- 3 Republic of Ghana (2014). *National plan of action to prevent, deter, and eliminate illegal, unreported, and unregulated fishing*. Available from: http://www.fao.org/fishery/docs/DOCUMENT/IPOAS/national/Ghana/NPOA_IJU.pdf
- 4 Republic of Ghana Fisheries and Aquaculture Sector Development Plan (2011-2016)
- 5 Lazar, N., Yankson K., Blay, J., Ofori-Danson, P., Markwei, P., Agbogah, K., Bannerman, P., Sotor, M., Yamoah, K. K., Bilisini, W.B. (2018). *Status of the small pelagic stocks in Ghana and recommendations to achieve sustainable fishing 2017*. Scientific and Technical Working Group. USAID/Ghana Sustainable Fisheries Management Project (SFMP). Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. GH2014_SCI042_CRC, 22 pp. http://www.crc.uri.edu/download/GH2014_SCI042_CRC_FIN508.pdf
- 6 INFOFISH, INFOPÊCHE, INFOSA, INFOPESCA (2008). *Present and future markets for fish and fish products from small-scale fisheries – case studies from Asia, Africa and Latin America*. FAO Fisheries Circular. No. 1033. Rome, FAO. 2008. 87p.
- 7 Dovlo, E., Amador, K., Nkrumah, B. *et al.* (2016). *Report on the 2016 Ghana Marine Canoe Frame Survey*. Fisheries Scientific Survey Division of the Fisheries Commission, Ministry of Fisheries and Aquaculture Development. August 2016,
- 8 *Ibid.*
- 9 *Ibid.*
- 10 Lazar, N., Yankson K., Blay, J., Ofori-Danson, P., Markwei, P., Agbogah, K., Bannerman, P., Sotor, M., Yamoah, K. K., Bilisini, W.B. (2018). *Status of the small pelagic stocks in Ghana and recommendations to achieve sustainable fishing 2017*. Scientific and Technical Working Group. USAID/Ghana Sustainable Fisheries Management Project (SFMP). Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. GH2014_SCI042_CRC, 22 pp.
- 11 FAO (2019). *Report of the FAO/CECAF Working Group on the Assessment of Small Pelagic Fish – Subgroup South*. Elmina, Ghana, 12-20 September 2018. *Rapport du Groupe de travail FAO/COPACE sur l'évaluation des petits poissons pélagiques – Sous-groupe Sud*. Elmina, Ghana, 12-20 septembre 2018. CECAF/ECAF Series / COPACE/PACE Séries No. 19/81. Rome. <http://www.fao.org/3/ca5402b/ca5402b.pdf>
- 12 Lazar, N., Yankson K., Blay, J., Ofori-Danson, P., Markwei, P., Agbogah, K., Bannerman, P., Sotor, M., Yamoah, K. K., Bilisini, W.B. (2018). *Status of the small pelagic stocks in Ghana and recommendations to achieve sustainable fishing 2017*. Scientific and Technical Working Group. USAID/Ghana Sustainable Fisheries Management Project (SFMP). Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. GH2014_SCI042_CRC, 22 pp.
- 13 Asiedu, B., and Nunoo, F. K. (2013). Alternative livelihoods: A tool for sustainable fisheries management in Ghana. *International Journal of Fisheries and Aquatic Sciences*, 2(2), 21-28.
- 14 Republic of Ghana (2015). *Fisheries Management Plan of Ghana: A National Policy for the Management of the Marine Fisheries Sector 2015-2019*. <https://www.mofad.gov.gh/fisheries-management-plan-of-ghana-2015-2019/>
- 15 *Ibid.*
- 16 Asiedu, B., and Nunoo, F. K. (2013). Alternative livelihoods: A tool for sustainable fisheries management in Ghana. *International Journal of Fisheries and Aquatic Sciences*, 2(2), 21-28.
- 17 Wright, J. H., Hill, N. A., Roe, D., Rowcliffe, J. M., Kümpel, N. F., Day, M., Booker, F. and Milner-Gulland, E. J. (2016). Reframing the concept of alternative livelihoods. *Conservation Biology*, 30(1), 7-13.
- 18 Tropenbos International (2005). *Alternative Livelihoods and Sustainable Resource Management*. Tropenbos International Ghana Workshop Proceedings 4, edited by D. K. B. Inkoom, K. Okae Kissiedu and B. Owusu Jnr. Wageningen, Netherlands. See also Townsley, P., Whittingham, E., Booker F., Ford, R., Turner, R., Cattermoul, B., Campbell, J., Forster, J., Morrish, N. and Marsh, J. (2014) *Guidance on Supporting Processes of Livelihood Enhancement and Diversification*. Report prepared as part of the Future of Reefs in a Changing Environment (FORCE) Project. IMM Ltd.
- 19 Roe, D., Day, M., Booker, F. *et al.* (2015). Are alternative livelihood projects effective at reducing local threats to specified elements of biodiversity and/or improving or maintaining the conservation status of those elements? A systematic review. *Environmental Evidence*, 4, 1- 22.
- 20 *Ibid.*
- 21 Gardner, C.J. (2016) *Opportunities for oil and gas corporate social investment in the fisheries sector of Ghana's Western Region: full scoping report*. Western Region Coastal Foundation, Takoradi, Ghana.
- 22 Cobbina, R. (2018). *Effort control in the artisanal canoe fishery of Ghana: Implications and likelihood of success*. Open Access Master's Theses. Paper 1271. <https://digitalcommons.uri.edu/theses/1271>
- 23 Asiedu, B., and Nunoo, F. K. (2013). Alternative livelihoods: A tool for sustainable fisheries management in Ghana. *International Journal of Fisheries and Aquatic Sciences*, 2(2), 21-28.
- 24 Gardner, C.J. (2016) *Opportunities for oil and gas corporate social investment in the fisheries sector of Ghana's Western Region: full scoping report*. Western Region Coastal Foundation, Takoradi, Ghana. Livelihood diversification has been observed in small-scale fisheries across the world – see Allison, E. and Ellis, F. (2001). The livelihoods approach and management of small-scale fisheries. *Marine Policy*, 25(2): 377–88
- 25 Tropenbos International (2005). *Alternative Livelihoods and Sustainable Resource Management*. Tropenbos International Ghana Workshop Proceedings 4, edited by D. K. B. Inkoom, K. Okae Kissiedu and B. Owusu Jnr. Wageningen, Netherlands.
- 26 IMM. (2008). *Sustainable livelihoods enhancement and diversification (SLED): a manual for practitioners*. IUCN, Gland.
- 27 Gardner, C.J. (2016) *Opportunities for oil and gas corporate social investment in the fisheries sector of Ghana's Western Region: full scoping report*. Western Region Coastal Foundation, Takoradi, Ghana.

- 28 Brugère, C., Holvoet, K. and Allison, E. (2008). *Livelihood diversification in coastal and inland fishing communities: misconceptions, evidence and implications for fisheries management*. Working paper, Sustainable Fisheries Livelihoods Programme (SFLP). Rome, FAO/DFID; Roe, D., Day, M., Booker, F. *et al.* (2015). Are alternative livelihood projects effective at reducing local threats to specified elements of biodiversity and/or improving or maintaining the conservation status of those elements? A systematic review. *Environmental Evidence*, 4, 1- 22.
- 29 IMM (2008). *Sustainable livelihoods enhancement and diversification (SLED): a manual for practitioners*. IUCN, Gland
- 30 Campbell J. (2008) *Systematic approaches to livelihoods enhancement and diversification: a review of global experience*. IMM Ltd., Exeter, U.K. / IUCN, Gland, Switzerland and Colombo, Sri Lanka / CORDIO, Kalmar, Sweden / ICRAN, Cambridge, U.K.
- 31 Brugère, C.; Holvoet, K. and Allison, E. (2008). *Livelihood diversification in coastal and inland fishing communities: misconceptions, evidence and implications for fisheries management*. Working paper, Sustainable Fisheries Livelihoods Programme (SFLP). Rome, FAO/DFID
- 32 Gardner, C.J. (2016) *Opportunities for oil and gas corporate social investment in the fisheries sector of Ghana's Western Region: full scoping report*. Western Region Coastal Foundation, Takoradi, Ghana. See also Pauly, D. (2006). Major trends in small-scale marine fisheries, with emphasis on developing countries, and some implications for the social sciences. *Maritime Studies (MAST)* 4(2): 7-22 and Roe, D., Day, M., Booker, F. *et al.* (2015). Are alternative livelihood projects effective at reducing local threats to specified elements of biodiversity and/or improving or maintaining the conservation status of those elements? A systematic review. *Environmental Evidence*, 4, 1- 22.
- 33 Brugère, C., Holvoet, K. and Allison, E. (2008). *Livelihood diversification in coastal and inland fishing communities: misconceptions, evidence and implications for fisheries management*. Working paper, Sustainable Fisheries Livelihoods Programme (SFLP). Rome, FAO/DFID
- 34 *Ibid.*
- 35 Citing Pollnac and Poggie, 2008
- 36 Wright, J. H., Hill, N. A., Roe, D., Rowcliffe, J. M., Kümpel, N. F., Day, M., Bookseer, F. and Milner-Gulland, E. J. (2016). Reframing the concept of alternative livelihoods. *Conservation Biology*, 30(1), 7-13. See also Inkoom, D.K.B. (2005) 'How viable are the alternatives? An analysis and evaluation of alternative livelihood schemes in sustainable resources management and poverty reduction', in Tropenbos International (2005). *Alternative Livelihoods and Sustainable Resource Management*. Tropenbos International Ghana Workshop Proceedings 4, edited by D. K. B. Inkoom, K. Okae Kissiedu and B. Owusu Jnr. Wageningen, Netherlands.
- 37 Gardner, C.J. (2016) *Opportunities for oil and gas corporate social investment in the fisheries sector of Ghana's Western Region: full scoping report*. Western Region Coastal Foundation, Takoradi, Ghana; McCay, B.J., N. Dolaak and E. Ostrom (2003). *The Commons in the New Millennium: Challenges and Adaptation*. MIT Press, Boston, USA, pp: 393.
- 38 IMM (2008). *Sustainable livelihoods enhancement and diversification (SLED): a manual for practitioners*. IUCN, Gland
- 39 Townsley, P., Whittingham, E., Booker F., Ford, R., Turner, R., Cattermoul, B., Campbell, J., Forster, J., Morrish, N. and Marsh, J. (2014) *Guidance on Supporting Processes of Livelihood Enhancement and Diversification*. Report prepared as part of the Future of Reefs in a Changing Environment (FORCE) Project. IMM Ltd.
- 40 Inkoom, D.K.B. (2005) 'How viable are the alternatives? An analysis and evaluation of alternative livelihood schemes in sustainable resources management and poverty reduction', in Tropenbos International (2005). *Alternative Livelihoods and Sustainable Resource Management*. Tropenbos International Ghana Workshop Proceedings 4, edited by D. K. B. Inkoom, K. Okae Kissiedu and B. Owusu Jnr. Wageningen, Netherlands.
- 41 Gardner, C.J. (2016) *Opportunities for oil and gas corporate social investment in the fisheries sector of Ghana's Western Region: full scoping report*. Western Region Coastal Foundation, Takoradi, Ghana
- 42 McCay, B.J., N. Dolaak and E. Ostrom (2003). *The Commons in the New Millennium: Challenges and Adaptation*. MIT Press, Boston, USA, pp: 393
- 43 This is a net which function as a type of set net when used alone, or as a purse seine net when used in combination with two other nets of different mesh sizes. Its use as a standalone net has however dramatically reduced over time due to the fact that the major species which it exploits (*Sardinella aurita*) has decreased significantly (Dovlo, E., Amador, K., Nkrumah, B. *et al.* (2016). *Report on the 2016 Ghana Marine Canoe Frame Survey*. Fisheries Scientific Survey Division of the Fisheries Commission, Ministry of Fisheries and Aquaculture Development. August 2016).
- 44 Pomeroy, R., Ferrer, A. J., and Pedrajas, J. (2017). An analysis of livelihood projects and programs for fishing communities in the Philippines. *Marine Policy*, 81, 250-255.
- 45 Cinner, J. E., Daw, T., and McClanahan, T. R. (2009). Socioeconomic factors that affect artisanal fishers' readiness to exit a declining fishery. *Conservation Biology*, 23(1), 124-130 and Cobbina, R. (2018). *Effort control in the artisanal canoe fishery of Ghana: Implications and likelihood of success*. Open Access Master's Theses. Paper 1271. <https://digitalcommons.uri.edu/theses/1271>
- 46 Teh, L., Cheung, W. L., Cornish, A., Chu, C., and Rashid Sumaila, U. (2008). A survey of alternative livelihood options for Hong Kong's fishers. *International Journal of Social Economics*, 35(5), 380-395.



Follow our work at: www.facebook.com/FarDwumaNkodo www.twitter.com/FarDwumaNkodo