

Testing Piloted Scheme for Waste Fishing Net Collection at Nyanyano in the Central Region of Ghana



CLIENT

AMBER FOUNDATION

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Summary

Fishing activities in Ghana continues to increase over the past decades resulting in the increased disposal of waste fishing along the sea shores. Majority of the derelict fishing gears abandoned on the beaches where fishing is carried out are made of plastics and nylon which has been recognized as a global threat to marine fisheries. As part of efforts to clean up beaches and reduce the levels of waste nets abandoned on beaches or drifted to sea, Amber Foundation in Germany in consultation with SCYCLES from Ghana organized a pilot study to collect waste fishing net for recycling into a more useful materials that are environmentally friendly. The fishing net campaign was carried out at Gomoa Nyanyano, located in the Gomoa East District of the Central Region of Ghana. Four net collection campaigns were carried out following an initial site reconnaissance survey and stakeholder consultation meeting. A buy-back scheme which has been previously developed at a similar campaign at Jamestown beach in the Greater Accra Region of Ghana was used. Approximately, a total of 840.94 kg of waste net was retrieved from 92 individuals who participated in the campaign. In order to secure the volumes of waste generated in subsequent campaigns, it is be critically important to empower local authorities and ensure sufficient financial and technical resources are available for them for setting up the necessary systems and infrastructures. Overall, the collection campaign was successful and recommends that the survey is sustained to clean up the beaches and possibly prevent the drift of abandoned net into the sea.

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CHAPTER 1

Background to the Study

1.1 Background to Collection of Waste Fishing Net

Ghana is considered an important fishing country in the African subregion as fisheries sector contributes to 3% of National Gross Domestic Product (GDP) (<https://fcwc-fish.org>). According to the Ministry of Fisheries and Aquaculture Development, Ghana's marine fisheries accounts for over 70% of the capture fisheries making this sector a predominant source of fishing in the country (www.mofad.gov.gh). As finishing activities continue to increase with the Government of Ghana providing incentives for this industry, the production of worn-out fishing gear such as nets, floats and lines are unavoidable (Figure 1). The sustainable management of derelict fishing gears (Figure 2), which has a negative impact on marine organisms, is a growing concern not only in Ghana but around the world (OSPAR Commission, 2020; Macfayden et al., 2009), although, locally, it has not been accorded the attention it deserves. However, it is widely acknowledged that derelict gear in the marine environment, has serious economic consequences, as well as negative effects on aesthetics and tourism, human health and safety, habitat destruction, and wildlife (Richardson et al., 2019; Link et al., 2019; Richardson et al., 2018).



Picture 1: Fishermen mending some worn-out nets

In Ghana, abandoned nets on the beaches are inescapable as one would easily chance upon them in most fish landing communities. Despite the lack of national data on current estimates of the quantities of unwanted fishing gear, waste net is likely to be a major component of marine litter in the country. The key question is how solid waste management can be improved, such as how waste, including plastics, can be better collected and treated. Though the handling and management of fishing gear waste does not

seem to be of national priority, the nuisance it generates is highly apparent on local people's health and the wellbeing on the global environment.



Picture 2: Commonly found discarded nets on the beach of Nyanyano

The pilot study carried out to determine the sustainable management options of end of life fishing net is therefore important to fisheries industry in the country. Definitely, dumping of derelict fishing gear as has been previously described may not be the right option for managing worn-out gears. However, landfilling, combustion and reuse/recycle has been found to significantly minimize the impact of these nets by either adding value to the waste products or using them for something totally different. Since the entire country is challenged with improper management of waste and lack of landfilling sites, recycling may be the next explorable and appropriate option. For effective recycling to be conducted, the amount of waste generated has to be estimated and that is what this study seeks to achieve. The Centre for Sustainable Cycles ‘SCYCLES’ is responsible for the piloting the collection scheme of waste net in Ghana under the project, Marine litter and microplastics: Promoting the environmentally sound management of plastic wastes and achieving the prevention and minimization of the generation of plastic wastes” implemented by the Basel Convention Coordinating Centre for the African Region and other consultants. The project's goals are to help prevent and substantially reduce marine litter and microplastics from Ghanaian source.

Chapter 2

Survey Methodology

2.1 Selection of Gomoa Nyanyano as the Study Site for Pilot Net Collection

Gomoa Nyanyano (528'0.012"N, 024'0.000"W) is a town located in the Gomoa east district of the central region of Ghana about 22 km from Accra, the national capital. The community is characterized by rural dwellings with fishing as the predominant occupation for the populace. The fishers use varied types of fishing gear depending on the type of net employed. Fisheries captured by fishermen from this region includes herrings, salmon, mackerels, crabs, shrimps, sea snails etc. The fisheries sector for this community are predominantly small-scale fisher otherwise known as artisanal fisheries in Ghana, common to most other fishing communities in the country in the country.



Picture 3: Fishing landing site at Gomoa Nyanyano

An interview with the chief fishermen indicated that they have about 1000 registered canoes in operation by nearly 600 fishermen (Figure 4). Since a similar research had been carried out at Jamestown in the Greater Accra Region, selection of Gomoa Nyanyano was ideal as it is one of the predominant fishing community in the Central region of Ghana.



Picture 4: Focus group interaction with opinion leaders involved in fishing at Nyanyano

2.2 Stakeholder Consultation

Prior to the beginning of the net collection, a stakeholder consultation with opinion leaders, fishermen, fish mongers and general public in the community was carried out. The purpose of the engagement was to inform them of the planned activities and highlight the need for more action on the management and recycling of waste net at the said location. More than 100 people (Figure 3) participated in the public engagement held with the team of SCYCLE consultants. The fishers were enthusiastic about the planned collection of fishing net in the community since they had no better alternative of managing their worn-out nets.



Picture 5: Stakeholder consultation meeting with fishers at Gomoa Nyanyano

At the meeting, interviews were carried out aimed at identifying their knowledge on waste management of derelict nets, causes of gear loss and abandonment, replacement as well as their opinion about the entire collection scheme.

From the survey, it was revealed that the type of fishing gear used by the fisherfolks whether trawl net, seine net, trap net or gill net was dependent on the target species captured by the fishers. Multifilament net made of cotton and monofilament net made of nylon were found on the beach. These nets were made up of various sizes and were discarded on the beaches. It was revealed that the monofilament net may be one of the widely used net and commonly discarded because of its short end-of-life as compared to the multifilament net.

According to the representative of the chief fisherman who was selected to work with the research team, a total of approximately 1000 fisherfolks operate from Nyanyano fish landing beach. Of these, close to 300 are involved in the use of the monofilament net mainly of nylon plastics, as a laboratory study confirmed. The use of plastic fishing net is of great concern as a result of the persistence, and nuisance it poses on the environment by impacting on fisheries resource. Although different types of fishing nets are used by various fleets in the area, predominantly multifilament net or monofilament net, the latter made of nylon was considered in this pilot study as the recycling company responsible for recycling the waste only deals with this type of net.

2.3 Status of Marine Litter at the Nyanyano Beach

The survey revealed that although waste fishing net could be the main challenge of waste generated in the community along the beach, other pollutants from plastic sachet wrappers, bottles, containers, waste cans equally contribute significantly to the marine litter in the area. The problem of abandoned fishing net on the coastal beach primarily comes from the inappropriate disposal of waste coupled with lack of waste collection facilities in the area. The survey revealed lack of education by the fishermen on the sound management of waste net as more than 80% of the respondent indicated they had not received any training on proper management of their waste net. Coupled with lack of formal education both at the basic and tertiary level, it is not surprising to see the chunk of waste discarded on the beaches surveyed. The danger to this revelation is that, most of these plastic nets, bouys and ropes could easily undergo photodegradation to microplastics when exposed to prolong sunlight and find its way into the adjacent ocean through runoff during rainfall.

Chapter 3

Incentive Based Collection

3.1 Reception and Management of Abandoned Waste Fishing Net on The Beach

The intention of this campaign was to test the buy-back scheme developed from previous pilot study at Jamestown in the Greater Accra Region. Provision of waste management facilities, educational awareness on the dangers of inappropriate hygiene and enforcement of laws on sanitation are prerequisite for sound management of any waste and litter prevention. From the stakeholder engagements, it was revealed that most fisherfolks could manage their waste appropriately but due to lack of collection centers and waste facilities available. The fisherfolks therefore gladly welcomed the idea of the buy-back scheme that was previously developed for waste management at Jamestown. The scheme rewards individuals with financial returns for bringing back their waste fishing nets at a designated collection center at a fee of One Ghana Cedis Fifty Ghana Pesewas (GH¢1.5/kg) per each kilogram of old or unwanted net turned-in.

3.2 Collection of Waste Fishing Nets

The study was conducted over four campaign periods for the collection of abandoned fishing nets. The collection took place at an open location under a shed built for net maintenance by the fishermen. At the reception facility, individuals with waste nets in their possession brought it to the facility where the nets were weighed and incentivized with cash (Figure 6 and 7).



Picture 6: Individuals ready to turn in their nets at the reception facility



Picture 7: Weighing waste nets prior to collection

On the first day of collection, 14 days after the stakeholder engagement, about 277.92 kg worth of unwanted or old net were retrieved from fishermen at the landing site. This was followed by 208.56, 82.26 and 267.2 kg for the second, third and fourth campaigns respectively. The number of individuals who turn-in their net numbered 27 for the first campaign, 24 for second and third campaigns as well as 30 for the fourth campaign (Figure 8 and 9). In an attempt to unravel the reasons behind the discarding their net, it came up that monofilament net had a shorter lifespan.

Some 60% of fishers responded that the rate of renewal of their fishing nets is one to three months, while the remaining 40% do renew their net after 4 to 6 months. This information is crucial to determine the frequency of net collection if the pilot study is to be rolled out into a routine net collection campaigned and sustained subsequently over the years.

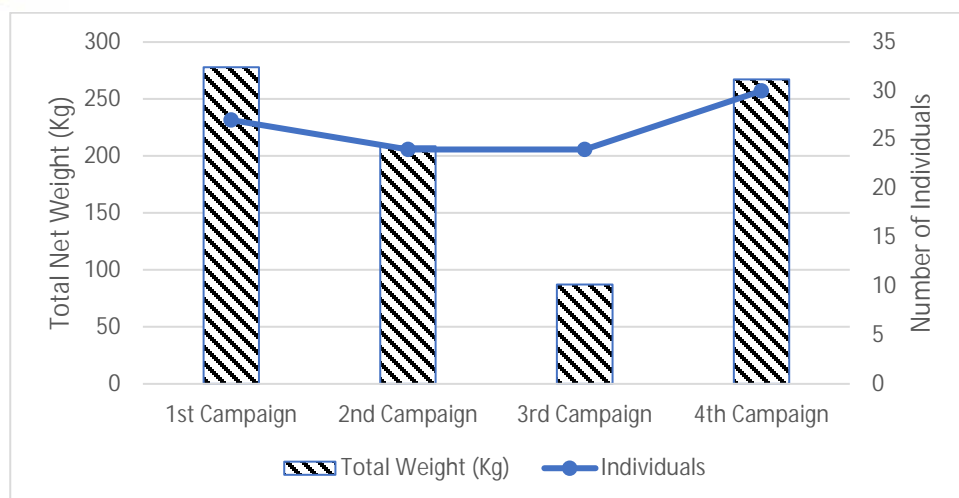


Figure 1: Summary of total net collected and the persons with net during the campaign



Picture 8: Samples of nets collected during the pilot campaign

Net worn out, damage by oncoming vessels and stacked on obstructions were some of the reasons why fisher would frequently replace their fishing nets (Figure 10). Majority of the fisherfolks stated that the location for their fishing activities were rocky and thus often they had their nets getting damaged when accidentally stacked on rocks. stacked on rocks.

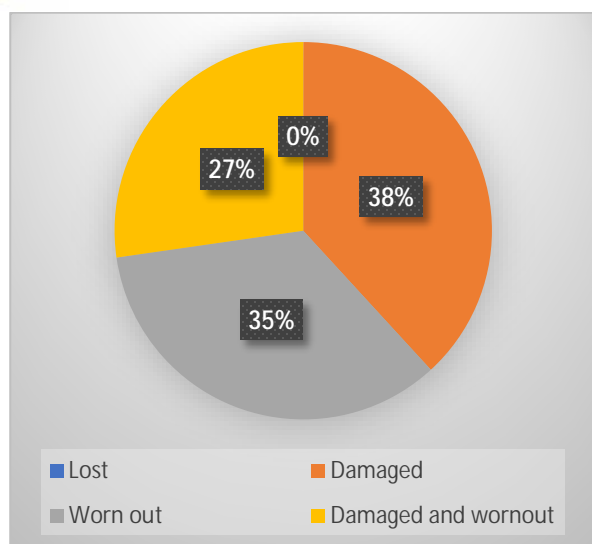


Figure 2: Reasons why fishers renew their nets

Others also said they unintentionally damaged their net at sea primarily as a result of bad weather, or obstruction by other passing fishing vessels at the campaign site. Although most fisherfolks responded that they hardly loose nets at port, when enquired whether they were willing to bring back unwanted or old net found at sea if they chanced upon it, they were unwilling to do that saying their ability to collect waste net at sea was dependent on the availability of appropriate waste disposal facilities at shore as well as provision of incentives for the services they provide. Others responded it was purely inconvenience and could disturb their activities of fishing or dependent on the willingness of other crew members.

The study further revealed that, fishers discarded their worn out or damaged nets on the shores because of lack of appropriate disposal alternatives available to them. This may not be a problem peculiar to only the beach under study, but entire nation is confronted with inappropriate waste disposal coupled with the time and effort to properly manage their waste nets. Thus, most fisherfolks dispose of their nets in the sea, on the beach or in stored them in their homes.

3.3 Net Management Options Adopted by Fishers at Nyanyano

A crucial role for efficient collection of waste net is the provision of waste containers for collection of unwanted nets by the fishers and the general public. Due to unavailability of collections sites and containers, majority of the waste nets as depicted in Figure 11 are burnt openly (51%), abandoned on the beaches (22%) or dumped into the sea (11%). A few of the respondents said they kept the waste net at their home (14%) since they had no better alternatives of managing their unwanted nets. Only 2% of

the respondents reused the net either by fencing on their backyard gardens or sold to others. Burning in particular could pose a serious health challenge as incomplete combustion of plastics are known to generate toxic gaseous by products known to cause carcinogenic effect on humans and pollute the environment.

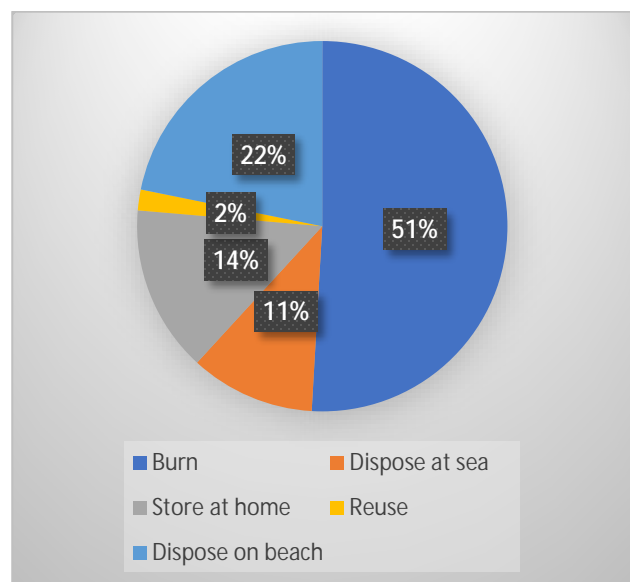


Figure 3: Current management of waste nets at Nyanyano

3.4 Potential Recycling of Waste Net

Reuse and recycling of plastics has been promoted as some of the efficient ways to achieve the sustainable management of waste. As a means to address the abandoned net on the beaches, prevent and minimize leakages to the marine environment, innovation technologies for recycling of end-of-life fishing nets into environmentally friendly usable items is appropriate although currently unavailable in Ghana. Alternatively, an international service company has been identified that recycles plastic fishing net in Norway. All the waste net that were collected during the campaign were handed over to representatives of this company resident in Ghana (Figure 12) for recycling. This was aimed at helping to minimize the contribution of marine litter from the landing site.



Picture 9: Handing over collected nets to representatives of Sea for Sea in Ghana

Chapter 4

Conclusion and Recommendations

4.1 Conclusion

- i. The results of the project revealed that waste fishing nets generation and disposal is of grave concern to the fishermen in the community. This is evidenced by the massive show of support of the project. The presence of the nylon nets on the beaches reveal that there was presently no available solution for these types of nets within the communities.
- ii. The enthusiasm of the fishermen and the entire community was a testament of the detailed process involved in engaging with the community. One of the lessons learnt from the process was that whenever we were to have collections campaigns advance notice and community engagement was a prerequisite. This proved successful in the volumes of waste nylon nets collected during the four-week campaign.
- iii. The entire incentivized collection campaign yielded 835.94 kilograms of nylon waste fishing nets. The first and last days of the campaign yielded the highest rate of collection whereas the third day yielded the least because on this said day most of the community members had travelled to a nearby community for a social event.
- iv. A total of nearly US\$300.00 was used to provide incentives for the waste fishing nets within the campaign period. All payments for the fishing nets were done through the use of mobile money payment platforms.
- v. In all a total of over one hundred transactions took place during the period of the campaign.
- vi. Using the experience gained from the earlier project supported by the NORAD/BRS, the all the collected nets were handed over to sea2see who would send them to their facilities for recycling.

4.2 Recommendations

4.2.1 Awareness Raising

The survey revealed that there is lack of awareness on the sound management of old net by the fisherfolks. Since majority of the fishers are illiterate, conscious educational campaign on the proper management of the old and waste net is necessary to minimize the threat of derelict net on the fisheries and marine resources besides the provision of proper waste collection systems and treatment. There are existing public address systems and other chains of communication by the traditional authorities and local government so these communication units could be utilized for such purpose to provide regular

information and interaction with the people. As it was apparent that littering of plastic nets on the shoreline was the greatest challenge, regular beach clean-up exercises can be organized as well.

4.2.2 Behavioral Changes

Besides awareness creation, it is fundamental and crucial for citizens both young and old adopt behavioral changes to keep their environment clean. The waste littered on the beaches were a composite of different waste streams and not just fishing net. When behavioral changes are instilled in the children and youth, future management options may not be difficult to operationalize. Civil society organizations should be empowered financially to assist raise awareness through both electronic and print media, schools and other volunteering groups.

4.2.3 Multi sectoral coordination

For the collection campaigns to be sustained, it is advisable to determine the agency responsible for providing reward schemes for gear retrieval or abandonment. This could be achieved through stakeholder consultation with government, fisheries department and local/municipal agencies.

This calls for a coordination among stakeholder in the fisheries industry, ministries of environment and sanitation, local government, tourism and private sector involved in the importation of the fishing gear. It is therefore recommended that extensive education and outreach is carried out on the deficiencies regarding the sources, amount and impact of abandoned fishing gear to sensitive fisherfolks on the dangers of this canker which may be inevitable as long as fishing activities continue on the Ghanaian coastal waters. The information generated from this survey would progressively enhance initiatives and programs that address this global threat for the marine fisheries industry, government officials, tourism and general public involved in this issue through enhanced national plan and coordination to address the problem of abandoned net on the Ghanaian beaches.

4.2.4 Additional Funding

Furthermore, funding sources for governmental and international organizations are necessary to build capacity as a means for addressing or preventing ALDFG under the umbrella of marine plastic litter initiative.

There is an urgent need to provide appropriate incentive mechanisms to manage the life cycle of fishing net by retrieving, reusing and recycling of worn-out net in order to prevent leakages into the ocean and being abandoned on the beaches. This can be achieved by adopting best practices by other countries on how ALDFG has been managed. Additionally, there is the need to explore the possibility of extended

producer responsibility to address the dumping and unsound management of waste fishing nets in an environmentally sound manner.

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SCYCLES GHANA

CERTIFICATE OF TRANSFER

This certifies that

294.17 kg of waste plastic monofilament fishing net was handed over to

Degblor Bright



Presented by

Eric K.A. Arthur (Project Lead)

Authorized by: Gifty Amoatey Awodede (Ms)

Chief Executive Officer



Date of Award: 5/02/24

