

Stakeholder and Network Analysis within the context of Traditional Governance and Tenurial Rights in the Artisanal Fisheries Sector in the Central Region of Ghana



Project implemented by:



Hen Mpoano

With financial support from:



Far Dwuma Nkodo

Securing Sustainable Fisheries



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1. Introduction

Background

Over the past century, there has been an apparent and widespread lack of success in managing the exploitation of common pool fisheries resources in a sustainable manner resulting in loss of benefits for government and fisherfolk alike (Abane *et al.*, 2013). This may be attributed, in part, to the fact that arrangements have not accounted for the different stakeholders and their interests, or have ignored traditional structures that could be utilised to strengthen the governance of fisheries which are a common pool resource.

Ostrom *et al.* (1994) define common pool resources as natural resources where one person's consumption subtracts from the amount of benefits available to others and where it is often necessary, but difficult and costly, to exclude beneficiaries from the resource (see also Abane *et al.*, 2013). Ghana's fishery resources qualify as a common pool resource which is impacted by a number of stakeholders directly or otherwise.

Common pool resources may be governed and managed by a wide variety of institutional arrangements that can be roughly grouped as governmental ownership, private ownership or community ownership. In recent times, there has been an increasing trend towards the co-management of common-pool resources by communities working with governments.

In Ghana, the marine fisheries sector is the main source of fish for local consumption producing 85% of the total catch. The inland sector accounts for the remaining 15% of catches. The marine sector can be categorized into four fishing units: small-scale (or artisanal), semi-industrial (or inshore), industrial (bottom trawl or deep-sea) and tuna sectors. The inland fishing industry is mainly artisanal (Nunoo and Asiedu, 2013).

Ghana has a coastline of about 550km and a maritime domain, including the territorial sea and the Exclusive Economic Zone (EEZ), of 228,000km² (Ghana Ministry of Fisheries and Aquaculture Development (MoFAD), 2015). Along the coast are over 200 villages whose economic activities revolve around the fishing industry. Artisanal fisheries in Ghana are characterised by wooden-hulled canoes with or without outboard motors. The catch is landed at various landing sites along the coast. A survey carried out in 2016 counted 11,583 artisanal vessels (Dovlo *et al.*, 2016), a figure expected to increase. The total annual catch of the canoe fleet was estimated at 254,000 metric tonnes in 2014 (MoFAD, 2015), but has seen a downward trend due to increased effort and a rise in illegal unreported and unregulated (IUU) fishing activities (Mutimukuru-Maravanyika *et al.*, 2013).

The above situation has given rise to the search for better ways to strengthen local governance structures in addition to other measures to ensure voluntary compliance, reporting and appropriate punishment.

Stakeholders within the artisanal fisheries sector in Ghana

A "stakeholder" can be defined as any individual, group, or institution that has a vested interest in the natural resources of an area and/or that may be affected by project activities and have something to gain or lose if conditions change or stay the same (Golder and Gawler, 2005).

Marine artisanal fishing is one of the productive activities that form part of a wider and more complex economic supply chain. Various stakeholders from the different segments and stages of the supply chain contribute vital inputs and services that sustain the economic and social benefits of the artisanal fishing industry. Any enterprise that seeks to influence the governance and tenurial relationships existing within this sector of the fishing industry should, therefore, give due consideration to this intricate network of stakeholders and their various stakes in the management and governance of fisheries resources.

Ghana's fishing industry supports the livelihoods of more than two million people (Nunoo and Asiedu, 2013) including fishermen, fish processors, traditional leaders, transport operators, and marketers, among others. Given the important role of artisanal fisheries in the livelihoods of fishers and other users of fisheries resources, both government and civil society organisations are scaling up efforts to improve the management of the sector. This has occasioned calls for identifying key stakeholders of the sector and how their interactions can be supported to yield better results in improving and sustaining the numerous livelihoods that are dependent on the local fisheries value chain. The output of this process will feed into identifying and strengthening the existing social networks that have sustained fishers and their communities since time immemorial.

Social network analysis

A social network is defined as a social structure of individuals who are related, directly or indirectly, to each other based on a common interest.

Social network analysis examines the relationships between individuals, organisations and other groups that interact with each other. The aim of social network analysis is to understand a community by mapping the relationships that connect individual members as a network, and to draw out key individuals/groups within the network (“components”), and/or associations between the individuals/groups (UK Home Office, 2016). A network analysis explores relationships and connections within a dataset derived from actors within a network.

Such analyses can contribute to the following objectives:

- Improving understanding of the structure and behaviour of networks of social relationships, as well as gaps in information flows and how best to deliver information to a target group.
- Developing a strategic view of the human and institutional landscape, and the relationships between the different stakeholders and the issues they care about most.
- Informing the design of strategies to improve the enforcement of existing regulations and efficient pathways for reporting offences/infractions.

The artisanal fisheries of Ghana are highly informal and are held together by a complex social infrastructure that is central to the continued survival of the industry. Emanating from long-tested traditional practices and institutions that have transcended several generations, unearthing these fisheries-related social networks would contribute vital inputs to current efforts aimed at transforming the sector and its associated livelihoods.

2. Research Objectives

This study sought to:

- identify stakeholders of the artisanal fishery;
- conduct a network analysis of these stakeholders in the context traditional governance and tenure arrangements of artisanal fisheries in the Central Region;
- provide recommendations on how these networks could be harnessed for the development of the artisanal fishery in the region.

3. Research Methodology and Study Area

The study was conducted in the Central Region of Ghana. Sources of data for this research were both primary and secondary. Focus group discussions were held for fishermen and fish processors at Elmina, Gomoa Fetteh, Moree, Mumford and Senya Bereku. The communities were selected based on the presence of traditional governance structures and the implementation of anti-IUU fishing norms identified during a baseline study conducted in 2017. Each focus group consisted of at least 20 participants. The participants were drawn from all landing sites present in the community and included fishermen, fish processors/traders and elders of the community.



a.



b.

Figure 1: Focus Group Discussions at a. Senya Bereku and b. Mumford



a.



b.

Figure 2: Interviews with a. Chief fisherman of Mumford and b. Chief fisherman of Gomoa Fetteh

Key informant interviews were conducted to solicit information from the chief fishermen of Gomoa Fetteh, Dago, Moree, Mumford, and Nyanyano. Officials from the Fisheries Commission, District Assemblies and relevant non-governmental organisations working within the fisheries sector were also interviewed as part of the study. Leaders of women's groups and transport operators were also interviewed. Key informants were selected based on their relevance to the artisanal fisheries sector within the Central Region.

A Stakeholder Analysis Tool (Social Network Visualizer) was used to identify:

- the stakeholders within Ghana's artisanal fisheries sector and roles they play; and
- the effects of stakeholder actions on artisanal fisheries.

Traditional power structures were investigated to determine hierarchies. Local norms and structures available for conflict resolution were documented. Punitive measures meted out by the traditional authorities were appraised to see if they conform to Elinor Ostrom's principles for sustainable governance of common-pool resources (CPR). Social Network Visualizer software was used to analyse networks of stakeholders within the artisanal fisheries sector, their roles and impacts on the governance of artisanal fisheries. Diagrams were produced to show connections between stakeholders and their influence.

The Degree of Centrality (DC) index (sum of edges attached to a node) was used to measure how connected each of the stakeholders within the network was to other stakeholders.

The Betweenness Centrality (BC) index was used to quantify the control each stakeholder exerted on communications between other stakeholders.

4. Research Findings

Traditional governance structures

System of governance

At the beach level, two main governance structures exist. They are the traditional governance structure led by the chief fisherman and the formal governance system led by the Fisheries Commission. Traditionally, the chief fisherman has represented the local chieftain at the beach. The government of Ghana is represented occasionally by officers from the Fisheries Commission and/or the District Assembly. The District Assembly is most active when a form of toll is taken from fishermen, for instance, if a wharf or fishing port is present at the landing site.

Fishermen are governed traditionally by chief fishermen. Chief fishermen are perceived to be the representatives of the paramount chiefs in all matters related to fishing activities in the various communities. The chief fishermen either inherit the stool, are appointed by the paramount chief or, in a few cases, are elected by the fishermen. Criteria for selection may include:

- Family of origin
- Experience gained in the fishing business
- Success chalked in the business
- Knowledge of cultural customs and traditional religious beliefs
- Political orientation
- Ability to negotiate
- Relations with influential fishermen and with the paramount chief
- Standing with the ruling political party

The chief fisherman's standing with the ruling party appears to be a recent addition to ensure that fishermen have ready access to premix fuel and other fishing equipment that are regularly distributed for free or on hire purchase to fisherfolk. Fishermen are bound by community norms and tradition to submit to the authority of the chief fisherman.

Ascension to the position of chief fisherman through inheritance may be paternal or maternal depending on the community. The pattern of inheritance might be altered through:

- Agitation by fisherfolk
- Destoolment by the paramount chief or representative of a deity
- Abdication by chief and family

Fish processors are traditionally governed by Konkohemaa. Unlike chief fishermen, the inheritance pattern is not constant. Selection is usually based on:

- Family of origin
- Experience in the fish processing business
- Age
- Relations with fellow fish processors and with the chief fisherman

Her power is vested in the chief fisherman and she is only able to exercise it when the chief fisherman is supportive. Unlike the chief fishermen, the women can choose whether or not to submit to the authority of the Konkohemaa.

Factors that are perceived to have contributed to the apparent weakened power of the Konkohemaa include:

- Dispersed nature of processing sheds
- Direct investments such as the purchase of inputs (e.g. nets, outboard motors) made by women into fishing trips in expectation of exclusive access to fish landed by the crew
- Fishermen dealing directly with processors instead of the Konkohemaa
- The use of expensive specialised fishing equipment which has increased the cost of operations to a point that fishermen consider the price usually proposed by the Konkohemaa as unacceptable

Attempts by organisations and chief fishermen to reinforce the authority of the Konkohemaa have been undermined by a lack of unity among women fish processors.

Power structure

The chief fishermen are supported in the discharge of their duties by a council of elders, canoe and net owners, landing beach committees, and premix committees. The chief fishermen may choose whether or not a Konkohemaa has a role in local fisheries governance within the community and may choose whether or not to work with them.

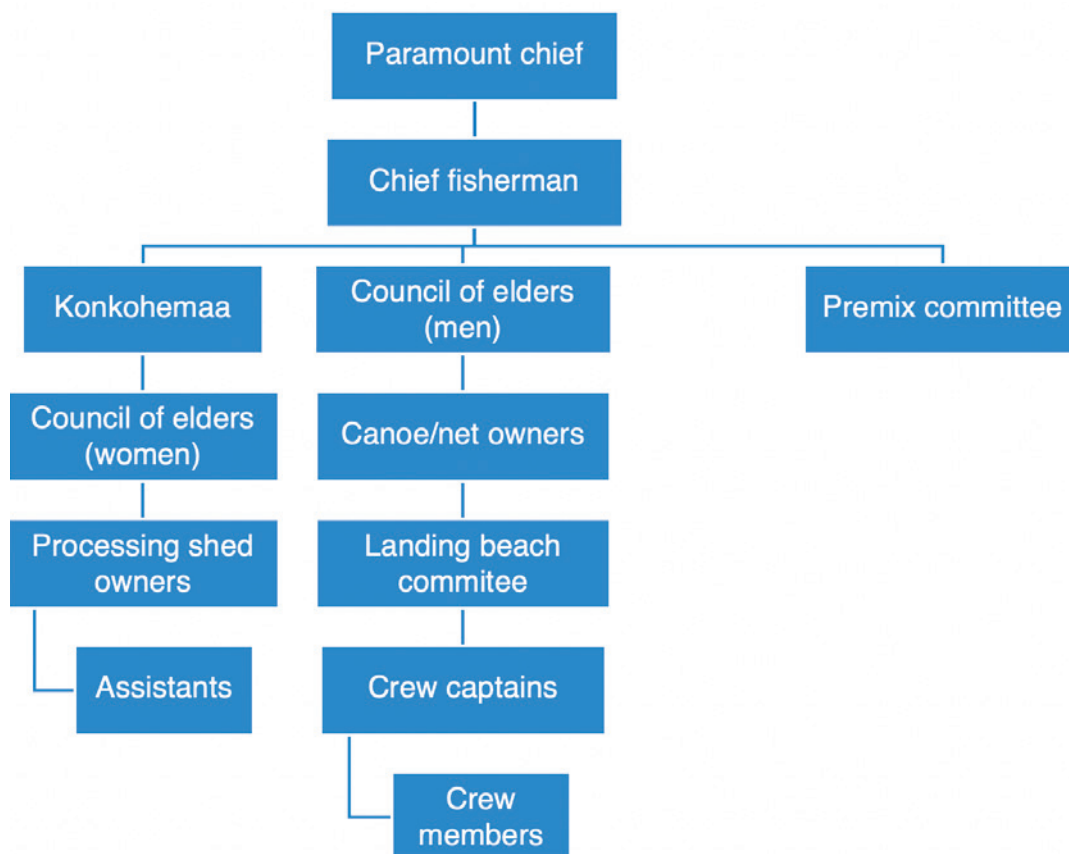


Figure 3: Hierarchy of traditional fisheries governance system in fishing communities

The Konkohemaa, if present, is also supported by a council of elders composed of women who are knowledgeable in community norms and have gained valuable experience in fish processing and marketing.

Roles of the traditional leadership

i. Paramount chief

Traditionally, the paramount chief is the ultimate leader of the community. He is supported by sub-chiefs who rule territories under the paramouncy. The paramount chief is usually the custodian of the territory's land and culture. He has the power to sell stool land within his domain, which may include many communities. He is represented at the community level by sub-chiefs serving in various capacities. He delegates his power along the landing beaches within the communities to chief fishermen who may be appointed by the paramount chief himself, accede via a clan/family lineage or be elected by the fishermen in the community.

In some communities, however, the lands belong to families/clans. In this case, the local chiefs have no dominant role.

ii. Chief fisherman

The chief fisherman is said to be the custodian of the beaches used to land fish. He holds the position as a representative of the paramount chief hence derives his power/authority from the traditional authority of the paramount chief. In the case where the position is inherited from a clan/family (Ebusua) lineage, the paramount chief may object to a selected candidate but it is the Ebusua (clan/family) that has the final say on who gets selected.

As the traditional representative of the paramount chief at the landing beaches, the chief fisherman has the following duties:

- Oversight responsibility of all fishing-related activities at the landing sites under his jurisdiction
- Settlement/arbitration of disputes between fishermen
- Representation of fishermen at traditional council meetings
- Custodianship of traditional customs regarding fishing in the community
- Representation of fishermen at regional meetings of the Ghana National Canoe Fishermen Council (GNCFC) and Ghana Inshore Fishers Association
- Together, with his council of elders, setting and enforcing local regulations at the landing beach level
- In collaboration with others, overseeing the selection of the Konkohemaa within his community

Issues that require arbitration include theft, debt recovery, gear destruction and recovery, labour issues and recklessness which cause injuries and loss of life during fishing activities. Fines that may be administered are treated in a later section of this report.

iii. Council of elders (men)

The council of elders, usually called “*Ba’esoun*” (*the designated seven*) are elected from the different factions that exist within the community. The factions that make up the council may arise from family ties (*ebusua*) or *Asafo* companies (traditional warrior groups). Care is taken to make sure each different faction is adequately represented on the council. Historically, the council generally consisted of seven members but the number now varies due to increasing numbers of interest groups, fishermen, canoes and landing sites.

The role of the council of elders at the landing beach includes:

- Assisting the chief fisherman in conflict resolution
- Advising the chief fisherman on fisheries-related matters
- Attending GNCFC meetings with the chief fisherman (secretary of the council only)
- Occasionally, representing the chief fisherman at the various landing beaches

iv. Landing beach committee

The landing beach committee is constituted by the chief fisherman with the aid of his council of elders. In some communities, the committee performs the duties of the premix committee. Membership of the committee is voluntary so in some cases committees are non-existent. The committee usually consists of younger retired fishermen and young men. The number of members varies depending on the size of the landing sites and the number of fishermen.

The duties of the committee include:

- Enforcement of local regulations
- Collection of tolls (usually fish or its cash equivalent) from canoes that land catch
- Reporting type of fish landed, infractions, disagreements between fishermen
- Ensuring punishments for non-observance of regulations are served
- In recent times, ensuring that children of school-going age are not involved in fishing

v. Premix committee

The premix committee was previously constituted by the district assembly, the Ministry of Fisheries and Aquaculture Development (MoFAD) and Fisheries Commission in consultation with the chief fisherman. Recently, its constitution has seen heavy political influence resulting in the removal of some chief fishermen who were believed to belong to an opposing party.



Figure 4: Crew members fill a tank with premix fuel at Gomoa Fetteh

The duties of the premix committee include:

- Taking delivery of premix fuel from premix distribution companies
- Sale of premix to fishers within their respective communities
- Payment of the cost of premix fuel supplied to the community into a specified bank account of the premix suppliers
- Rendering of accounts monthly, quarterly or yearly concerning the proceeds of premix sales to the chief fisherman, for onward submission to the paramount chief
- Implementation of development projects decided by the community using proceeds from the sale of premix within the community

vi. Canoe/boat owners

Fishermen own canoes and boats through inheritance, outright purchase or hire purchase. They are the main drivers of fishing activities at the landing sites. They have access to the landing sites either by virtue of being members of the fishing community or by express permission from the chief fisherman. Migrant canoe/boat owners may also access landings sites after negotiating tolls with the chief fisherman or his representatives (council of elders or landing beach committee).

The duties of canoe/boat owners include:

- Choice of gear type for fishing vessel
- Choice of crew and captain
- Financing of fishing trips
- Welfare of fishermen
- Choice of a buyer for the catch

vii. Crew captains

Crew captains are chosen based on their expertise and age. Canoe owners automatically become captains if they intend to join the fishing expedition.

The duties of the crew captain include the following:

- Leading fishing activities
- Purchase of premix
- Servicing of nets and other gear
- Sale of fish to buyers
- Rendering accounts to canoe/boat owners



Figure 5: A fishing crew hauls in their net in Ghana

viii. Crew members

Most fishermen do not own fishing gears or vessels. They join fishing expeditions as part of the main crew or as hired help. They handle the physically demanding tasks of fishing which include:

- Paddling of non-motorized canoes
- Mending of nets
- Disentangling nets
- Hauling of catch
- Segregation of catch for sale

ix. Konkohemaa

The Konkohemaa is the leader of all women involved in the purchase of fish at the landing site and the processors of fish. Their selection is generally based on success and experience and they are usually appointed from specific families. Their importance and influence depend on the community. While previously the Konkohemaa had sole responsibility for bargaining fish prices, fish mummies (Banodzi) are now involved in this activity because they finance fishing trips and have entered into agreements with canoes. In some communities, the position of Konkohemaa is vacant because it is perceived that they are no longer relevant to fishing activities.

In communities where they are active, their roles include:

- Fish price negotiations
- Conflict resolution among fish processors
- Receipt of fishing inputs (pans, roofing sheets, etc.) on behalf of women
- Representation of women at GNCFC meetings
- Sale of fish collected as a toll from the fishermen (on behalf of chief fisherman and elders) and from the fish processors (on behalf of the Konkohemaa and elders)

In Ewe-dominated communities along the coast of Central Region, which usually do not have Konkohemaa, there is a women's leader who performs the duties of the Konkohemaa. In addition to these duties, she arranges for vehicles to transport processed fish to market centres where the processors then come under the control of the Konkohemaa.

x. Council of elders (women)

The council of elders for the Konkohemaa are usually seven in number. Selection to serve as an elder is usually based on influence, experience and age. Elders are either selected by delegates from various landing beaches or by the Konkohemaa herself. Their duties at the landing sites include:

- Fish price negotiations
- Fish quality monitoring
- Assisting Konkohemaa in the resolution of conflicts

xi. Processing shed owners (fish processors)

The processing shed owners are usually the business owners. They buy fish from fishermen or their representatives at the landing beach and process the fish for sale in nearby markets. Fish mummies (Banodzi) fall under this category. Their duties include:

- Purchase of fish
- Pre-financing fishing trips
- The hiring of labour for processing fish
- Sale of processed fish



Figure 6: A fish processor smoking fish at Gomoa Fetteh

xii. Processing assistants

Processing assistants are usually young women who either have not attained sufficient experience or lack the finances needed to start their own businesses. They may be hired through proxies.

Financing mechanisms of the traditional governance system

The traditional governance structure does not receive any formal financial support from the central government, district assemblies or the traditional councils. In order to ensure that the various functions of the local governance system of the fishery are sustained, stakeholders of the artisanal fishery sector in the Central Region have agreed to uphold the payment of tolls. These tolls are collected locally from fish processors and fishermen, as part of the proceeds from commercial activities, premix sales and also from fines imposed on fishermen.

Tolls

i. Tolls from fish processors

Women pay tolls to Konkohemaa by giving fish through the council of elders (women). The payment is made after the fish has been purchased from crew captains or canoe/boat owners. The fish is accumulated and sold. The proceeds are then used to fund arbitrations and other activities decided by the Konkohemaa and her council of elders.

ii. Tolls from fishermen

Fishermen pay tolls as a percentage of the fish they land. The percentage varies from community to community and depends on the size of the canoe, type of fish landed and the quantity of fish landed. The period (month) during which the fish is landed may also be considered in the determination of the toll. The fish is accumulated by the landing beach committee to be sold by a designated fish processor, or its cash equivalent paid directly to the chief fisherman and his council of elders.

Proceeds of premix sold

A portion of the proceeds from premix sales is also given to the chief fisherman. This remittance is not compulsory and can be reviewed or ignored by the premix committee. In certain instances, chief fishermen who are thought to be sympathisers of the political party in opposition do not receive this remittance. Political interference in the creation of the premix committee and in the distribution of the fuel is perceived to have contributed to this situation.

Other sources of funds

The activities of the traditional governance machinery are also financed by accrued fines, donations and support from non-governmental organisations and from the personal coffers of the leaders.

Local norms

Local norms are community-initiated rules used to regulate fishing and related activities. They are usually oral in nature and are set by the paramount chief, the chief fisherman or the fisherfolk. Some rules are observed by all fishing communities, while some are community-specific based on the inclination of the chief fisherman and the fisherfolk. Over a period of time, these norms have evolved into customary laws in most fishing communities.

Currently, no community norms have been formalised into legal fishing regulations. However, plans are advanced for getting general community norms like fishing holidays formalised. Other community norms like the ban on the use of chemicals, explosives and light (in some communities) are already supported by existing fisheries regulations but lack coast-wide enforcement due to lack of formal regulations that back punitive measures set by the chief fishermen. Punitive measures have not been harmonised coast-wide so recalcitrant fishermen have the opportunity to move to landing sites where community enforcement systems are weak.

Conditions for voluntary compliance

Where community-initiated rules have been successfully implemented, oath-swearing before a deity has been the main tool used to ensure voluntary compliance among community members. The success of this method has been dependent on the belief system of the community and historical events that could be used to serve as a deterrent to fishermen.

Communities with strong beliefs and many followers of traditional deities were found to have a greater chance of achieving voluntary compliance. Communities that have a lot of migrant fishing crews, especially communities with fishing wharves or fishing harbours, have a greater possibility for disobedience of the community-initiated norms.

General rules

i. Ban on Tuesday fishing

Historically, fishing on Tuesday is banned to allow fisherfolk to use the day for rest and to attend to family issues. The Tuesday holiday is also used for net mending, conflict resolution and other social engagements.

Punishment for disobeying this rule varies. A fine is demanded for the first offence. A second offence attracts an increased fine, as well as a sheep and a bottle of schnapps. A third offence results in a ban from fishing activity enforceable in all communities.

ii. Ban on fighting at the fish landing site

Fishermen are expected to use available mechanisms for the settlement of disputes. Fighting to settle disputes attracts fines, the level of which increases with the number of offences. Repeated fighting may be punished with a ban from all fishing activities within the community.

iii. Response to accidents

Fishermen are required to assist in the rescue of other fishermen involved in at-sea collisions or when their canoe overturns due to rough seas.

Failure to join in rescue efforts may result in a ban from landing within the community, a heavy fine, schnapps and a sheep for traditional rites if a life was lost.

iv. Recovery of gear lost/destroyed at sea

Fishermen sometimes have their gear destroyed by underwater rocks, other canoes, semi-industrial boats and industrial vessels. Fishermen who see sections of destroyed nets are to recover them and deposit them at the chief fisherman's palace. An announcement is made for whoever lost the net to come and claim it.

Fishermen are obliged to follow this rule. Repeated disobedience attracts public reprimand or a ban in the worst case.

v. Fish pricing

The Konkohemaa is tasked with determining the price of fish that is landed at the landing site. The price is determined according to the catch of the first canoe to land and remains the buying price for subsequent catches until larger catches are landed or the rate of landings decreases.

Refusal to sell at the determined price may lead to the rejection of fish at the landing site by buyers. Fishermen may be summoned by the chief fisherman and may be fined if the disobedience is severe.

Special rules

i. Fishing with light, chemicals and explosives

The use of chemicals and explosives in fishing has been banned in many communities. Monitoring is carried out by experienced women and members of the landing beach committees. Attitudes towards light fishing and transshipment (saiko) vary from community to community. Fish suspected to have been caught by these methods is held until the council of elders determines its wholesomeness. This fish, even though strongly resisted, has gained acceptability in communities such as Elmina and Apam where highly influential individuals are said to be involved.

Fish that is landed but not allowed by the community is immediately seized and destroyed or freely distributed. The crew may be summoned and fined. In some cases, especially in the case of light fishing, the gear may be seized and destroyed. Some communities hand over the offenders to the police for prosecution. It is, however, perceived that the offenders are often released after they have been handed over.

ii. Restricted areas

In some communities, women are not allowed to cross certain lagoons, estuaries and stretches of beach for traditional religious reasons. Adherence to this regulation has not been strict due to the influx of Christianity and Islam.

iii. Seasonal closure

Some communities place a temporary ban on fishing in lagoons or estuaries as part of customary rites towards the celebration of an important festival.

Community members found to have disobeyed the rules are made to pay a fine which includes money, sheep and schnapps to be used to perform rituals to appease the local deities.

Process of arbitration

The arbitration process in communities follows the procedure described below.

Fishermen follow a specific chain of reporting (**Figure 7**). Skipping this chain of command could result in the dismissal of the case. For cases between crew members, the case is heard by the crew captain. For cases between crew and captains, the report is made to the canoe owner. Cases between canoes are reported to the landing beach committee who in turn reports to the chief fishermen through the council of elders.



Figure 7: Chain of reporting for fishermen

After a complaint is made to the chief fisherman, he assembles his elders and sets a day to listen to both sides of the case. The case is then adjourned to a later date to allow the chief fisherman and elders to deliberate and gather evidence and testimonies on the issue under discussion. Occasionally a report is made to the police if need be. A colleague chief fisherman may also be consulted. At the set date, the judgment is delivered and the appropriate actions are taken.

Cases of infractions are heard first by the chief fisherman, then passed on to the paramount chief if the issue cannot be solved by the chief fisherman. Cases between fish processors are heard by the Konkohemaa first and passed on to the chief fisherman if the arbitration fails.

Chief fisherman and fishermen interactions

Meeting days

Meetings are generally scheduled based on necessity rather than being conducted on specific days. They may be scheduled with individuals for discussions on infractions, conflict resolution, passing of judgment and payment of fines. When meetings are organised, only the required audience is targeted due to limited availability of resources and space. Tuesdays are used for such meetings. Meeting attendance may or may not be compulsory depending on the objectives. For example, meetings for arbitrations are compulsory while meetings for discussions or announcements are optional. Fishermen may also arrange meetings with their chief fisherman on pertinent issues.

Dissemination of information

Information is usually relayed from the chief fisherman to fisherfolk through community information centres if available. Alternatively, the information is passed through the landing beach committee to fishermen. Information from the fishermen is passed through the landing beach committee to the chief fisherman and his council of elders.

Fisher folk and Fisheries Commission interactions

Central Region is partitioned into eight operational zones of the Fisheries Commission, each having a zonal officer. One zone may cover two or more districts. Five of these zones are coastal. The Central Region Fisheries Commission is headed by a Regional Director who reports to the Executive Director of the Fisheries Commission in Accra.

Zonal officers conduct extension activities for aquaculture businesses, engage fishers in public education, monitor fish catch, enforce regulations and conduct periodic consultations with stakeholders. The zonal officers are assisted by technical officers, technical assistants, national service personnel and volunteers. The chief technical assistant is responsible for the daily collection of data on fish catch and oceanographic water quality. He/she records data on fish species, quantity and selling price and submits these data electronically. He/she also serves as a communication link between the Fisheries Commission and the chief fisherman.



Figure 8: Project officer interacting with the Technical Assistant for Gomoa Fetteh, Senya Bereku, Nyanyano and Dampase

In addition to the functions above, the Fisheries Commission collaborates with NGOs involved in fisheries-related activities. The Commission also interacts with the various fisher associations and groups and provides some training especially for the women's groups.

Legal pluralism

Legal pluralism, that is the existence of multiple legal systems within a geographic area, is common in Ghana. For example, in many fishing communities along the coast, fishing is not allowed on Tuesdays. Some communities also have Thursday as a day of rest. In some communities in the Greater Accra Region, the ban on Tuesday fishing also covers the processing and sale of marine fish. Legal pluralism is also evident in how chief fishermen and Konkohemaa are selected or removed from their positions. Enforcement systems of local rules and regulations also vary along the coast.

The various bans on fishing activities are enforced by the traditional authorities in the communities without recourse to formal judicial processes. These norms co-exist with the national laws regulating fishing activities in Ghana. This co-existence between the laws emanating from the state and those from the traditional legal systems means that local fishers may have alternative systems open to them for seeking redress. It should be noted, however, that there are challenges with the enforcement of traditional rules in some communities.

Stakeholders within the local artisanal fisheries sector

In addition to the traditional governance stakeholders described above, other stakeholders in artisanal fisheries in Ghana identified were government, Fisheries Commission, NGOs, transport operators/owners, consumers, women's groups such as the those formed by the Central and Western Fishmongers Improvement Association (CEWEFIA) and the Development Action Association (DAA), and fisher associations such as the National Association of Fish Processors and Traders (NAFPTA), Canoe Owners and Fishermen's Association (COFA), and the Ghana National Canoe Fishermen Council (GNCFC).

Interests of stakeholders

Interests of the identified stakeholders in the artisanal fisheries sector were classified into the following areas:

i. Oversight responsibility

Oversight responsibility represents the interests of any stakeholder who controls access to vital resources and has the ability to determine how resources (both financial and human) are allocated to specific tasks or activities within the artisanal fisheries sector.

ii. Monitoring

Monitoring involves all stakeholders whose interest is to observe activities within the sector. This includes measurement of different biophysical parameters, monitoring of vessels, and the monitoring of fish catch and gear. This also involves monitoring of demand and price fluctuations at the various fish marketing centres.

iii. Enforcement

Enforcement interests include the responsibility for making arrests and imposing sanctions, whether in cash or in kind. Both formal and informal stakeholders are considered.

iv. Advocacy

Advocacy interests include the responsibility for using various tools to call for changes in modes of operation, fisheries regulations or general attitudes toward the use of fisheries resources, among others. It also includes stakeholders whose interest is to secure the tenurial rights of fishers.

v. Training/capacity building

This interest includes all stakeholders whose goal is to build the capacity of other stakeholders in areas such as personal hygiene, food safety, fire safety, customer service, financial management, savings and loans, alternative livelihoods and food processing, among others.

vi. Purchase of fish

This interest incorporates all stakeholders whose interest is to buy fish, whether fresh or processed, for onward sale, processing or consumption.

vii. Sale of fish

This interest refers to the intention to sell fish in its fresh or processed form to buyers. It also encompasses the intention to monitor how fish is sold at the landing beach to prospective customers.

viii. Fish processing and marketing

This interest refers to the intention to process fresh fish by salting, smoking or frying, among others. It also refers to the intention to sell the fish in local markets within the community or in regional markets.

ix. Fishing

This interest refers to the intention to capture fish from the sea using any form of fishing gear. The fish may include pelagic or demersal species and may include both finfish and shellfish.

x. Provision/sale of fishing input

This interest refers to the intention to provide fishing inputs such as nets, premix fuel and outboard motors, among others, for free, at subsidised rates or at full cost, which may be paid for outright or through hire purchase.

xi. Formulation of regulations

This interest refers to the intention to influence or set regulations for the artisanal fisheries sector. Stakeholder roles may include dialogue and research concerning such regulations and their enactment.

xii. Transport

Under this interest fall all stakeholders whose interest is to transport fishing inputs (including nets, outboard motors, canoes and premix fuel), fish catch and fisherfolk to fishing centres, landing sites and markets.

xiii. Reporting

This interest represents the intention to report on issues within the fisheries sector. Issues may include fish stock, fish landings, infractions, vessel movement, gender initiatives, disputes between fisherfolk, revenue accrued from the sale of premix fuel and the dissemination of information to other stakeholders and to the general public.

xiv. Conflict resolution/arbitration

This interest represents the intention of settling disputes or disagreements between stakeholders. The settlement of issues related to infractions also falls under this interest.

xv. Representation

This interest includes the intention to represent a target group in discussions and negotiations. A target group may be fisherfolk, government or any other stakeholder within the artisanal fisheries network.

Table 1: Table showing various interests of stakeholders identified within the artisanal fisheries sector

Stakeholders	Interests														
	Oversight responsibility	Monitoring	Enforcement	Advocacy	Training/capacity building	Purchase of fish	Sale of fish	Fish processing/ marketing	Fishing	Provision/sale of fishing input	Formulation of regulations	Transport	Reporting	Conflict resolution/ arbitration	Representation
Government	X	X	X	X	X					X	X		X	X	
Fisheries Commission	X	X	X	X	X					X	X		X	X	X
Paramount chief	X	X													
Chief fisherman	X	X	X	X							X		X	X	X
Council of elders (men)		X	X								X		X	X	
Konkohemaa		X		X		X	X	X			X		X	X	X
Council of elders (women)		X	X			X	X				X		X	X	
Landing beach committee		X	X												
Canoe/boat owners		X	X		X		X		X	X		X	X		
Premix committee										X			X		
Fishermen		X					X		X	X		X	X		
Fish processors		X		X		X		X		X		X	X		
Premix fuel suppliers										X					
GNCFC	X	X	X	X							X		X	X	X
COFA										X				X	
NAFPTA		X	X	X							X		X	X	X
NGOs		X		X	X					X	X		X		
Women's groups					X	X		X				X			X
Consumers						X						X			
Transport owners												X			

Aligned interests

An aligned interest is one whose outcome stands to benefit all or the majority of the stakeholders of that interest. Monitoring and reporting were the highest aligned interests (**Table 2**). This indicates high interest in the transfer of information between stakeholders on issues such as stock information, IUU fishing practices, destroyed gear and fisheries regulations. This was a positive outlook because the lack of information and communication barriers have been identified as some of the root causes of failures in fisheries management (Siitari *et al.*, 2014).

In this particular case, it could be argued that since the resource at stake is in a common pool but central to the livelihoods of all stakeholders, the majority of stakeholders are highly interested in following closely what is happening to the resource and also in giving out information on what they believe may affect their continued access to the resource. In such situations, policy interventions regarding monitoring and reporting will require less external input to be successful if well-conceived.

Table 2: Number of stakeholders with each aligned interest

Interest	Number of stakeholders
Oversight responsibility	5
Monitoring	14
Enforcement	9
Advocacy	8
Training/capacity building	5
Purchase of fish	5
Sale of fish	4
Fish processing/marketing	3
Fishing	2
Provision/sale of fishing input	9
Formulation of regulations	9
Transport	6
Reporting	13
Conflict resolution/arbitration	9
Representation	6

It is also important to note that fishing and fish processing/marketing are less aligned in these stakeholder relationships because they denote some form of private benefit from the common pool resource. Here the stakeholder involved enjoys a higher sense of benefit. Meaning that policies regarding fishing and fish processing would require heavy external involvement to be successful. This is a reason why a closed season, prohibition of some fishing methods, etc. would require the direct involvement of monitoring, control and surveillance (MCS) from the government.

Control of access to fisheries resources

Access control in fisheries is largely a direct management measure. This explains why interests in this category (enforcement, formulation of regulations, conflict resolution/arbitration, provision/sale of fishing inputs) attracted stakeholders mostly involved in management. This group of stakeholders benefit largely from the outcome of these interest areas in the fisheries sector. Issues like a closed season, marine protected areas (MPAs), fishing holidays, etc. would not succeed if these stakeholders were not targeted. Among the stakeholders identified, six were found to control access to the fisheries resource either directly or indirectly by controlling access to important inputs.

i. Central government

The central government controls access to the sea. It may determine which vessels are allowed to fish within the country's Exclusive Economic Zone (EEZ) and when these vessels may access the sea for fishing. It determines where to site wharves and fishing harbours and may limit access to landing sites by constructing sea defence walls.

The central government also essentially controls access to premix fuel and influences the formation of premix committees at the various landing sites.

ii. Fisheries Commission

The Fisheries Commission is the government agency with direct oversight of fishing activities in Ghanaian waters. It controls access by determining when and where to close access to fisheries resources through the implementation of closed seasons and marine protected areas, among others.

The Commission also has responsibility for issuing licenses to artisanal canoes, although this has not yet been fully implemented. Implementation of licensing would have the potential to limit how many canoes have legal access to the fisheries resource. Licensing may also be used to determine which canoes have access to premix fuel and to subsidised fishing inputs such as outboard motors.

iii. Paramount chief

The paramount chief is the traditional leader of the local community. He delegates power to the chief fisherman and the traditional governance structure to function in their various capacities. He also has the authority to remove any of the traditional leaders from office. All punishments meted out by the chief fisherman are enforced through the power of the paramount chief. He has the prerogative to review or disallow judgment passed by the chief fisherman. He could also ban a fisherman or crew from landing at any landing site within his jurisdiction (which could be more than one). Through this, the paramount chief could determine which fishermen have access to the landing sites for fishing activities.

The paramount chief is also the custodian of the land in the community. He controls access to land used as landing sites, can limit access by selling the land to private persons for development into real estate and may either accelerate or hinder the development of the landing sites. He has the authority to decide which sections of the beaches may be used as landing sites and can restrict access to sections of the beaches through the enactment of local regulations.

The paramount chief also controls the expenditure of accrued fines, as well as proceeds from tolls within the community.

iv. Chief fisherman

The chief fisherman is the most powerful stakeholder in the traditional governance setup in artisanal fishing communities. He controls access to the landing site by influencing who has the right to use the landing sites. He also controls local access to the fisheries resource by regulating which canoes are allowed to set off to sea.

The chief fisherman also has the power to restrict access to the sea by instituting temporary bans or outright bans on fishermen and vessels as punishment for various offences.

He also controls which kind of gear is allowed on the landing sites within his jurisdiction and may be instrumental in the fight against IUU fishing practices.

v. Canoe/boat owners

Canoe owners are the main stakeholders in artisanal fisheries. They own the vessels and usually the gear that is used in fishing activities. They are responsible for the selection of fishermen for their crews and are primarily responsible for the financing of fishing trips.

As such, they are able to control which fishermen go to sea, how much effort is exerted on the fisheries resource, which gears are used and the source of financing for the fishing trip. They also control who can buy the catch. In some communities, they influence the choice of the chief fisherman and other positions.

vi. Premix committee

The premix committee controls access to premix fuel which is today a basic requirement for the artisanal fishing industry. They are responsible for the distribution of the fuel, payment of fuel cost to the premix suppliers and carrying out development projects using proceeds from the sale. In some communities, they could prevent the sale or withhold premix fuel from a canoe crew as a punishment upon instruction from the chief fisherman. However, this also depends on how cohesive the committee is with the chief fisherman and his council of elders since some committees are constituted with the influence of the ruling political party.

Tenurial rights

Landing sites

The landing sites are perceived to fall within the zone protected by the government as part of the beach. However, landing sites together with beaches are not actually protected in practice. Significant areas of the beach have either already been sold or are in the process of being sold usually by family heads and chiefs who own the land to private individuals especially for development into hotels. Loss of shoreline to rising sea levels and strong waves has also led to the loss of sections of the land used as landing sites.

Landing sites are communally owned. Landing sites are selected by the paramount chiefs with the aid of community elders. Once selected, the land then falls under the jurisdiction of the chief fisherman. Community members only need to inform the chief fisherman of their intention to engage in fishing and agree to conform to the local norms.

The number of landing sites varies from community to community. The access and size of landing sites, together with the number of canoes that land fish in a given area, determine the size and number of landing sites. Landing sites have been chosen and named based on the following factors:

- Proximity to communities
- Wave strength
- Size of beach
- Nature of beach (sandy beaches preferred)
- Distinguishable landmarks to be used for identification
- Number of canoes landing at the beach
- Whether the fishers are indigenes or migrant fishers

Processing sites

Land for fish processing is usually obtained from family lands. Women rarely pay money to access the land. They usually offer some processed fish to the landowner as a token for allowing access to the land for fish processing. In some communities, land may also be rented at a rate of up to GHC 10 per month. Processing sheds may be passed down to children under a similar arrangement. Construction of more expensive smokers such as the “Ahotor” ovens usually attracts opposition from landowners because it is perceived to be an investment that cannot be destroyed at short notice.



Figure 9: Ahotor smokers (left) and Chorkor smokers (right) in a shed at Elmina

In some isolated cases, women have been asked to return rented land to the owners which resulted in financial losses.

Fisher groups and associations

Fisher groups and associations have been formed with the intention of improving the livelihoods of fisherfolk. They usually serve as the mouthpiece for the section of fisherfolk that they represent and also serve as the point of contact for government agencies and NGOs. They also mobilise fisherfolk for the development of the fishing communities and receive training to develop skills in areas such as leadership, financial management, efficient use of resources and, in some special cases, addressing child labour and trafficking.

Ghana National Canoe Fishermen Council (GNCFC)

The Ghana National Canoe Fishermen Council (GNCFC) is intended to be an association that brings all fishermen under one group. However, it has evolved to be an association of chief fishermen and their councils of elders. Very recently, Konkohemaa and their elders have been integrated into the association. The membership pays dues for the welfare of fishermen, which are usually financial compensations for bereavement, sickness, etc. and funding for press conferences and other related activities. Meetings are held at the regional level every three months, and at the national level once a year.

The association serves as the mouthpiece for artisanal fishermen in dialogues and negotiations. However, communication of information to the fisherfolk remains a challenge, largely because of the relative ease of removing chief fishermen who are perceived as taking decisions that are not in the interests of the fisher folk or are perceived to be against some IUU practices which are prevalent in the respective communities.

With support from the USAID-funded Sustainable Fisheries Management Project, the association has provided input into the review of fisheries policy and regulations through the Fishermen to Fishermen (F2F) consultation process that aims to support implementation of the 2015-2019 Fisheries Management Plan and increase the capacity of the GNCFC. The F2F dialogue was based on consultations and an awareness campaign in the local languages and under traditional settings which fed into the production of regional resolutions that proposed an additional fishing holiday and a closed season (Lazar, 2016).

National Fish Processors and Traders Association (NAFPTA)

The National Fish Processors and Traders Association (NAFPTA) was formed in 2015. Its formation was initiated by the Fisheries Commission to organise women involved in fish processing and marketing into one organisation. It was also formed to incorporate the different women's groups that had been created at the community level.

NAFPTA's current membership in Central Region alone is estimated to be at least 1,000 members. Its members are formed into local groups at the community level. Executives elected at the local level then elect district executives who in turn elect regional executives. National executives are elected from the regional executives.



Figure 10: Project officer interacting with Mrs. Peace Abia Gavor (Central Region President, NAFPTA)

The monthly dues paid by members is GHC5 per month according to the association's constitution. Ten per cent (10%) of the amount accrued at the local level is paid into a district account. Ten per cent (10%) of the amount accrued at the district level is then paid into the regional accounts. The dues were intended to be used for livelihood support interventions but the expected government support for such interventions has not arrived. The association has, however, received support in the form of leadership training, usually from NGOs.

Canoe Owners and Fishermen Association (COFA)

The Canoe Owners and Fishermen Association (COFA) is a community-based initiative to address the issue of non-inclusion of local fishermen in GNCFC's activities. It has only one branch at Nyanyano and has been in existence for at least 12 years. The main objectives of the association are to support the general welfare of fishermen and to facilitate access to logistical and financial support for their fishing activities.

The association meets at least once a month. Initially, members paid dues but the perception of mismanagement resulted in members abandoning their payments. However, the association has been able to secure soft loans for its members. At present, restructuring is ongoing to integrate the chief fisherman and his council into the association. Though the association has no representation on the council of elders, it has a mutual understanding with the traditional leadership to include its executives in any discussion on fishing-related issues in the community. It is envisioned that similar branches will be set up in other fishing communities.

Anti-IUU task force

The anti-IUU task force was set up to combat IUU fishing practices near the shores of Nyanyano. Its activities yielded positive results leading to the seizure of light fishing equipment, monofilament nets and nets with small mesh sizes. The task force received support from the paramountcy and representatives of the local deities but a lack of formal legislation to provide a legal basis for the association's activities and the failure to prosecute offenders led to a loss of interest of members of the task force. The group is now defunct leaving enforcement of local norms to the chief fisherman, his council of elders and the landing beach committee.

Women's groups

Women's groups are the most active fisher groups within the artisanal fisheries sector.

i. Fish Processors Association of Ghana (FiPAG)

This group used to perform the functions of NAFPTA but collapsed because it was unable to obtain government recognition and lacked the resources to run efficiently. Disagreements on leadership choices and management of the accrued dues also led to the loss of interest in local groups at the community level.

ii. Central and Western Fishmongers Improvement Association (CEWEFIA)

CEWEFIA has been in operation for more than 20 years. Its objectives are to improve the standard of living among women living in fishing communities and to emphasize the importance of education among women, especially migrants. CEWEFIA has successfully built a school in this regard and has established several groups at the community level that operate with very little supervision.



Figure 11: Project staff interacting with the CEWEFIA group at Moree



Figure 12: Project staff interacting with the CEWEFIA group at Elmina

The local groups meet every week. Their dues are paid monthly. The amount ranges from GHC 1 to GHC 5 depending on the financial strength of the women in the group. The groups have had several training sessions including in alternative livelihood skills, financial management (savings, record-keeping), marketing strategies (packaging, value addition, customer service, personal hygiene) and fire safety.

iii. Development Action Association (DAA)

Development Action Association (DAA) was registered in 1998 as a farmer-based non-profit organization, which sought to promote self-reliance, participatory and sustainable development.



Figure 13: Project staff interacting with the DAA group at Mumford

DAA operates small women's groups in 54 communities in the Greater Accra, Central and Eastern Regions of Ghana, with 98% of the beneficiaries being rural women with low education. Its main areas of intervention are food security i.e. fish processing, cassava production, microcredit, vegetable production, fish farming and small animal raising. It has carried out training in financial management, hygiene, fire safety and marketing for the women in its groups.

Level of activity of associations

The criteria used to appraise fisher associations included (see **Appendix**):

- availability of a constitution and membership register;
- payment of dues;
- duly elected executives;
- organisation and attendance of local meetings, regional meetings and national meetings;
- presence of structures to disseminate information to individual members;
- information dissemination system;
- engagement in development activities such as skills training, capacity building, and development projects; and
- conflict resolution mechanisms.

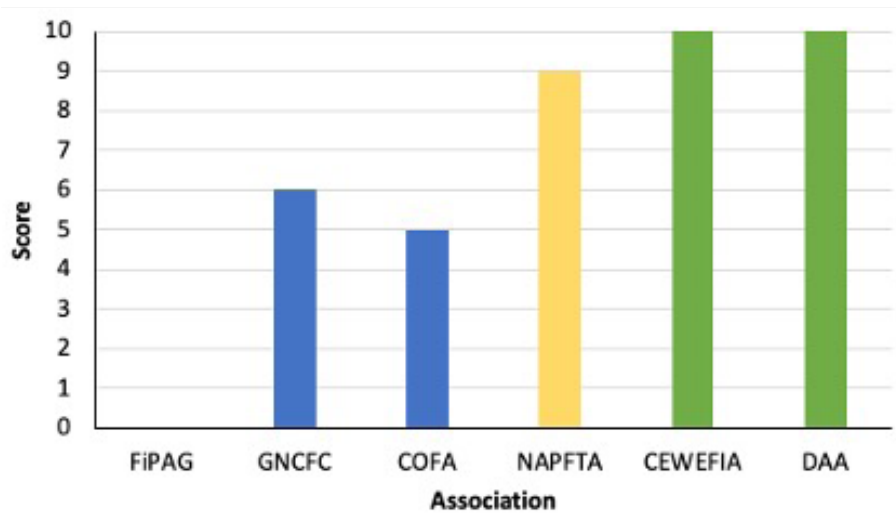


Figure 14: Graph showing the strength of the various fisher associations

CEWEFIA and DAA women's groups were found to be the most active fisher associations (**Figure 14**). They have an active social welfare system and hold regular trainings to build the capacities of their members. The local groups receive assistance from their mother NGOs and other organisations aimed at improving their economic status.

Stakeholder/social network analysis

A social network is made up of a number of actors, in this case, stakeholders, who are connected by some type of relationship. The goal of the social network analysis (SNA) is to map these relationships and analyse the structure of the network and the influence of different actors.



Figure 15: Artisanal canoes at Gomoa Fetteh landing beach

Local artisanal fisheries network

The network formed between stakeholders shows links between the government and its agencies and the local stakeholders (**Figure 16**). It also shows important links between NGOs and fisherfolk. The chief fisherman is the most connected stakeholder in the network. This is an important indicator of how important their role is in the management of the artisanal fisheries.

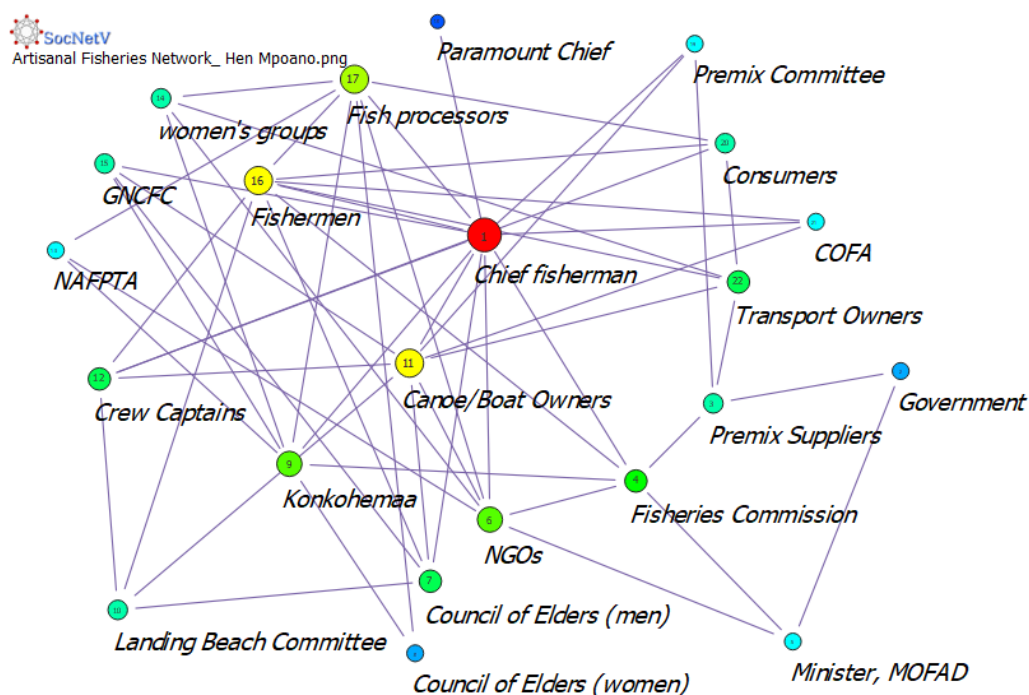


Figure 16: Social Network Visualizer Export showing how stakeholders in artisanal fisheries are networked

Connections between stakeholders in the fisheries network

In the artisanal fisheries network (**Figure 16**), the Degree of Centrality (DC) index (sum of edges attached to a node) was used to measure how connected each of the stakeholders within the network is to other stakeholders. In this type of analysis, the actor with the highest centrality score is seen as the most central and the most dominant (Jean-Jacques, 2016). Analysis of the network (**Figure 17**) indicates that chief fishermen are the most connected stakeholders within the network.

Canoe owners were found to exercise absolute control over the activities of fishermen without canoes. They decided when to fish, what gear to use and whether or not to indulge in IUU fishing practices. They also determined the migration patterns of fishermen and could migrate to avoid punishment from the traditional governance structure. They could also decline to follow the directive of the Konkohemaa on the sale price of fish if catches were low or the available buyers were ready to pay more.

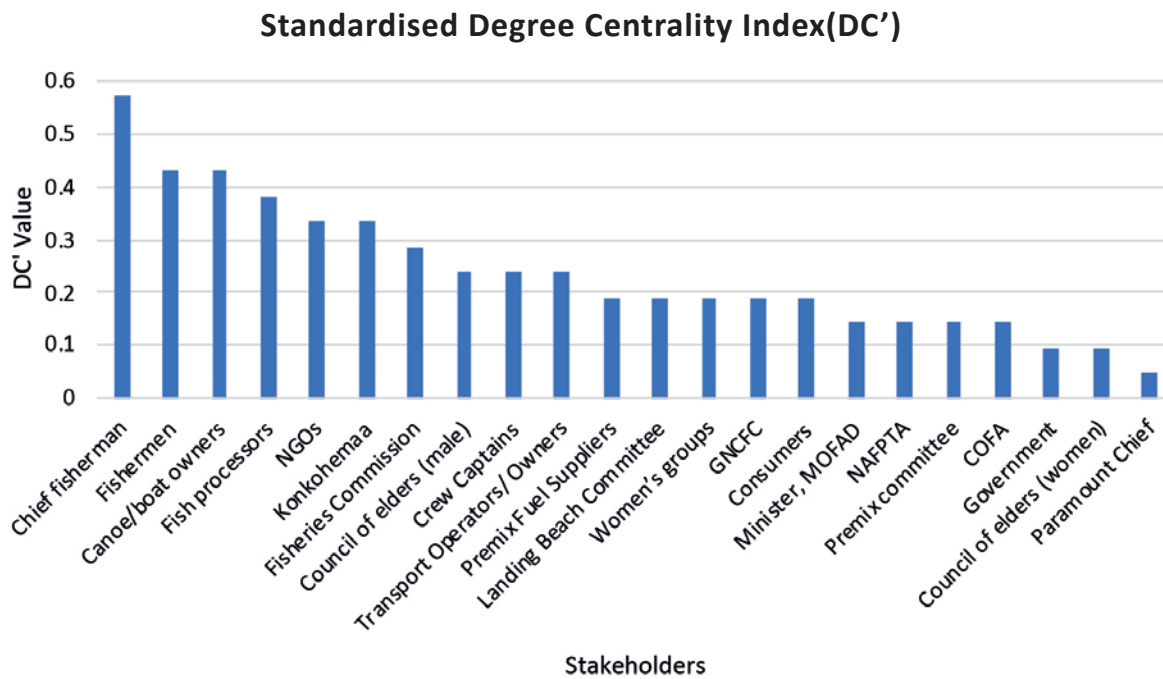


Figure 17: Degree of Centrality (DC) indices for the various stakeholders

Though the analysis indicates that chief fishermen are the most critical stakeholders, their authority or duties are not recognised formally by current fisheries regulations or the Ghana National House of Chiefs which is mandated by law to give recognition to paramount chiefs and sub-chiefs. This, they say, is highly detrimental to the performance of their functions because they have no true power to enforce either local norms or formal regulations.

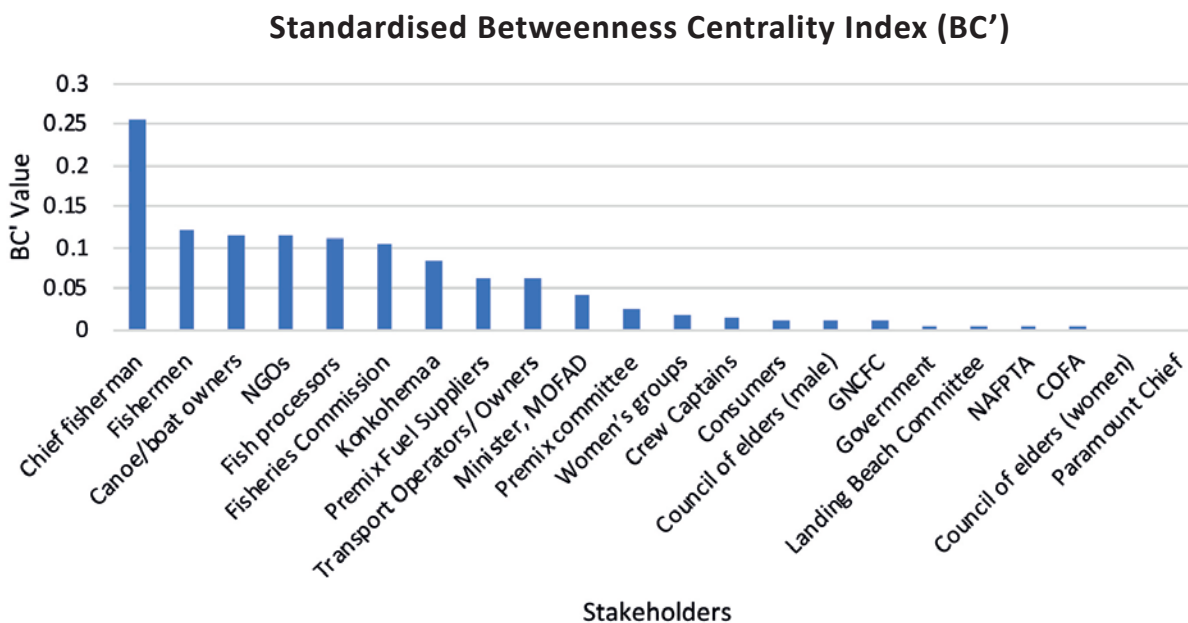


Figure 18: Betweenness Centrality (BC) indices for the various stakeholders

Betweenness Centrality (BC) quantifies the number of times a stakeholder (node) acts as a bridge along the shortest path between two other stakeholders (nodes). It was introduced as a measure for quantifying the relative importance or influence a stakeholder exerts as an intermediary on the communication processes between other stakeholders within the network (Du, 2016). Results of the analysis (**Figure 18**) suggest that the chief fishermen are the most important stakeholders in the communication and dissemination of information on fisheries-related issues. However, information flow from chief fishermen to fishermen has not been very efficient. Even though initiatives like the F2F have achieved limited success in facilitating chief fisherman-fisherfolk interactions, there is the need to ensure that such engagements are compulsory, not optional as is the case in many communities.

Coupled with their traditional role as the representative of all fisherfolk, chief fishermen are also potentially the most powerful stakeholders. However, this is not seen in practice because there is no legal framework to support their position or enforce their roles in the artisanal fisheries. Their potential is also not fully realized because it is relatively easy to remove them from their post.

The Fisheries Commission and NGOs are important stakeholders in the artisanal fisheries industry. The Fisheries Commission's role in monitoring and enforcement cannot be exaggerated although its potential has not been fully realized due to inadequate staffing, limited resources and undue political interference in the discharge of its duties as stated in the fisheries laws. The Commission was identified as the most important stakeholder in the fight against IUU fishing in the country's waters.

The influence of NGOs is perceived to have peaked very recently. Their role in public education, monitoring and representation are seen to have been instrumental in the fight against IUU fishing, fisheries law and policy reviews and the building of capacities of other stakeholders. They have also been instrumental in the fight against child labour and trafficking in the fisheries sector.

The paramount chief is the least influential in decision-making in the artisanal fisheries sector mainly because he is perceived to have delegated his authority and duties in the community to the chief fisherman. He only intervenes when a problem transcends the ability of the chief fisherman.



Figure 19: Fish traders at Bawjiase market in Ghana

5. Conclusion and Recommendations

In all, 11 stakeholders were identified in the traditional governance structure in fishing communities along the coast of the Central Region of Ghana. The chief fisherman was identified as the leader of fisherfolk in the various communities, a position he holds through the expressed authority of the paramount chief of the area. The Konkohemaa was identified as the leader for fish processors and marketers usually chosen by the chief fisherman and his council of elders. Both leaders are only able to exercise a limited amount of authority because their positions are not duly recognised by the National House of Chiefs or current fisheries laws.

Eight more stakeholders were identified who perform various roles in the artisanal fisheries sector in Ghana. This number included two NGO women's groups, as well as GNCFC, COFA and NAFPTA who are fisher associations which have gradually emerged as major stakeholders in the sector. COFA was found to operate currently in only one community.

It is recommended that the following steps be taken to ensure that influential stakeholders and the various networks that result from their interactions are channelled towards the efficient functioning of the local governance structures and tenure rights arrangements of the artisanal fisheries industry in the Central Region:

- Chief fishermen and Konkohemaa should be given recognition by the National House of Chiefs.
- Fisheries laws should recognise the important roles the chief fishermen play in the management of artisanal fisheries and provide a legal basis for them to enforce the regulations.
- Fisheries resource user groups like NAFPTA and GNCFC should be supported to establish branches at the community level. These community branches should then be involved in decision making and information communication.
- Canoe/boat owners present a unique group of stakeholders within the artisanal fisheries sector. They should be represented at policy and regulation formulation discussions and other national-level stakeholder engagements.
- Punitive measures set by traditional authorities should be formalised through district assembly by-laws and strengthening of systems in communities where enforcement is weak.
- Chief fishermen and Konkohemaa should be given training on fisheries laws, arbitration and reporting to enable them to conduct their activities more efficiently.
- Marine Police should be present at the community level to support the traditional governance structures in enforcing the law.
- Cases of IUU fishing practices reported to the police should be handled transparently to ensure accountability and promote voluntary compliance.
- Regulations that protect the landing sites should be set at the district assembly level to ensure immediate protection. This could be supported by registration of landing sites with the Lands Commission.
- Regulations should be regularised and applicable across all landing sites along the coast of Ghana to ensure compliance.
- Anti-IUU task forces should be supported by enacting formal regulations and providing identification (identification cards, uniforms, certificates, public endorsements) to make their activities more efficient.
- The F2F Dialogue should be supported to continue as a means of engaging fishermen on issues related to fisheries.

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7. Appendix

Table 1: Appraisal of fisher associations

Criteria	Association					
	FIPAG	GNCFC	COFA	NAPFTA	CEWEFIA	DAA
Constitution	No	Yes	Yes	Yes	Yes	Yes
Membership register	No	No	Yes	Yes	Yes	Yes
Dues payment	No	No	No	Yes	Yes	Yes
Elected executives	No	Yes	Yes	Yes	Yes	Yes
Local meetings	No	No	Yes	No	Yes	Yes
Regional meetings	No	Yes	No	Yes	Yes	Yes
National meetings	No	Yes	No	Yes	Yes	Yes
Information dissemination system	No	Yes	No	Yes	Yes	Yes
Development activity	No	No	No	Yes	Yes	Yes
Conflict resolution mechanisms	No	Yes	Yes	Yes	Yes	Yes
Score	0	6	5	9	10	10

Table 2: Degree Centrality Indices for identified stakeholders

Label	DC	DC'	%DC'
Chief fisherman	12	0.571	57.143
Fishermen	9	0.429	42.857
Canoe/boat owners	9	0.429	42.857
Fish processors	8	0.381	38.095
NGOs	7	0.333	33.333
Konkohemaa	7	0.333	33.333
Fisheries Commission	6	0.286	28.571
Council of elders (men)	5	0.238	23.81
Crew captains	5	0.238	23.81
Transport operators/ owners	5	0.238	23.81
Premix fuel suppliers	4	0.19	19.048
Landing Beach Committee	4	0.19	19.048
Women's groups	4	0.19	19.048
GNCFC	4	0.19	19.048
Consumers	4	0.19	19.048
Minister, MOFAD	3	0.143	14.286
NAFPTA	3	0.143	14.286
Premix committee	3	0.143	14.286
COFA	3	0.143	14.286
Government	2	0.095	9.524
Council of elders (women)	2	0.095	9.524
Paramount Chief	1	0.048	4.762

DC Sum = 110.000

Max DC' = 0.571 (Chief fisherman)

Min DC' = 0.048 (Paramount Chief)

DC' classes = 10

DC' Sum = 5.238

DC' Mean = 0.238

DC' Variance = 0.016

Table 3: Betweenness Centrality Indices for identified stakeholders

Label	BC	BC'	%BC'
Chief fisherman	53.726	0.256	25.584
Fishermen	25.227	0.12	12.013
Canoe/boat owners	24.119	0.115	11.485
NGOs	23.97	0.114	11.414
Fish processors	23.546	0.112	11.213
Fisheries Commission	21.669	0.103	10.318
Konkohemaa	17.644	0.084	8.402
Premix fuel suppliers	12.859	0.061	6.123
Transport operators/ owners	12.799	0.061	6.095
Minister, MOFAD	8.775	0.042	4.178
Premix committee	5.031	0.024	2.396
Women's groups	3.358	0.016	1.599
Crew captains	3.077	0.015	1.465
Consumers	2.414	0.011	1.15
Council of elders (men)	2.06	0.01	0.981
GNCFC	2.042	0.01	0.972
Government	0.9	0.004	0.429
Landing Beach Committee	0.417	0.002	0.198
NAFPTA	0.2	0.001	0.095
COFA	0.167	0.001	0.079
Council of elders (women)	0	0	0
Paramount Chief	0	0	0

BC Sum = 244.000

Max BC' = 0.256 (node 1)

Min BC' = 0.000 (node 8)

BC' classes = 21

BC' Sum = 1.162

BC' Mean = 0.053

BC' Variance = 0.004



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