

ARTISANAL INLAND FISHING AND LIVELIHOOD ACTIVITIES IN KWAHU-NORTH DISTRICT, GHANA

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ABSTRACT

Fishing forms a major economic activity and source of livelihood among communities dotted along the Volta Lake in Ghana. It is undertaken on a small scale, artisanal basis, leading to low returns and inability to break out of the poverty trap. The research examines the artisanal fishing and livelihoods along the Volta Lake in the Kwahu-North District. The study examined livelihood activities of the key people involved in artisanal fishing and how their positions along the fish production value-chain affected their wellbeing. Both qualitative and quantitative analytical procedures were used. A combination of stratified random sampling and purposive sampling techniques were used to select a total of 194 respondents from four communities in the district. Methods of data collection included questionnaires, focused group discussions, and direct observation. Difficulty in acquiring hired labour accounted for the use of child labour. Smoking was the most common mode of processing fish. Institutions like VRA, MoF, FD, VBRP and the Government should also play a major role through financial and technical assistance in improving livelihood conditions of the fishers. This will ensure sustainability of the fishing industry.

Key words: Artisanal, Implications, Livelihoods, Mechanisms, Mobilise, Outcomes, Strategies, Sustainability, Vulnerability.

1 INTRODUCTION

The world's fisheries occupy an important niche in the global eco-system, economy, and human diets. According to the Food and Agriculture Organisation [1], total world fisheries production reached a new high of 143.6 million tonnes in 2006. About 110.4 million tonnes of this resource was used for human consumption, with the remaining going to other uses such as livestock feed and fishmeal for aquaculture [1]. Artisanal fisheries have long been a very important economic sector in West Africa. Small-scale fisheries are typical of traditional, artisanal, and/or subsistence character. According to Mathew [2], fishing activities have been passed on from generation to generation, and fishing is carried out for livelihood and food security purposes [2]. In some coastal communities, up to 60% of their animal protein intake comes from fish. Where distribution systems are efficient, inland communities can also obtain smoked dried fish that can be stored for up to three months. Since most of these rural communities do not have facilities for chilling or freezing foods, this makes smoked fish much more important than beef [3].

The African industrial fishing sector has always been weak and this is reflected in the limited contribution of the sector to Gross Domestic Product (GDP) in most countries. In Namibia and Mauritania, fisheries contribute more than 6 percent of GDP, in Sierra Leone 11 percent, and in Ghana 4.5 percent [3]. The fisheries sector contributes significantly to

national economic development objectives relating to food security, employment, poverty reduction, and foreign exchange earnings. The sector is significant for its division of labour based on gender. Men are involved in fish harvesting, undertaking the main fishing activities in the artisanal, while women are the key players in on-shore post-harvest activities; fish processing, storage, and trade activities. Many women are also engaged in the growing frozen fish distribution trade as well as marketing fish within and outside the country. As the fish stock gets depleted and catches dwindle all operators at all levels of the fish value-chain are affected [4]. Following the above, fish has always had far-reaching implications for food security in Ghana. Fish supplies naturally augment food availability; ensuring good nutritional outcomes, particularly of the poor and rural populations; and, the vast number of people engaged in the fishing industry earns income that improves upon their access to food [4]. In the Kwahu-North district in Ghana, migrant settlers on the Obosum and Afram rivers depend on fishing as their main economic activity which provides them with employment, income and protein. An examination of artisanal fishing value-chains in the Kwahu North district with a focus on livelihood activities is the subject matter of this research.

1.2 statement of the problem

The contributions of artisanal fishing to employment creation, food security, and livelihoods in rural communities have been acknowledged in the literature [5] [3]. However, global and local statistics and estimates point to the fact that annual fish yields and catches in Ghana have been on a decline for some time now. But, how reduced fish harvests affect the livelihoods of fishers has received little research attention. Artisanal fishing involves different players who perform different roles in fish capture, processing, and marketing. These activities serve as a fulcrum around which the livelihoods of families are built. However, how individual players along the fish production value-chain cope with reduced catches and the rising cost of inputs for processing as well as transportation difficulties in reaching marketing centres are little understood. To understand how these factors affect livelihood security and the range of coping mechanisms that fishers adopt, there is the need to investigate the dynamics of artisanal fishing through the application of Porter's (1985) Value-Chain Analysis. In the Kwahu North District, social and economic infrastructure and services in fishing communities seem not to be of the standard and quality that can support higher levels of welfare for the fisher folks and more importantly, for the younger generation of children and the youth. This is because the communities are scattered with most of them poorly linked with roads. Others are located on islands and can only be reached by boat. The scattered and remote nature of the settlements makes them difficult to be reached by government interventions. There is, therefore, the need to find out the stock and quality of educational and health facilities and services to determine what level of welfare they may need. In the wake of low catches, fishermen may resort to ingenious ways of catching more fish, some of which may be detrimental to the long-term sustainability of the fishing industry. It is, therefore, important to find out issues of overfishing, pressure on fish stocks, and competition for territorial areas which may result in conflicts. Besides unacceptable fishing methods and conflicts, fishers' ability

to mobilize sufficient financial resources to support their businesses needs to be closely examined as this information is largely unavailable on the situation in the Kwahu-North District. Even though some information exists on the effects of tree stumps in the Volta Lake and how they affect navigation, the damage that these tree stumps cause to fishers' nets and how this affects their businesses have also received little research attention. It is important to know how much fisher spend on net repairs and how that affects their net earnings. Finally, the fishing technology employed may have implications for the long-term sustainability and annual profitability, and viability of the fishing enterprise. These issues need to be carefully studied as they affect livelihood outcomes. It is against this background that, the study sets out to investigate the work and livelihood activities of artisanal fishers in the Kwahu North district.

2 LITERATURE REVIEW

2.1 Artisanal fishing

According to FAO [6], the fishery can be defined as the exploitation of living aquatic resources held in some form of common or open-access property regime. Although the current study is not concerned about all living aquatic resources fish, this definition is useful because it focused on open access fisheries where restriction cannot be exercised. However, Arlinhaus et al [7] defined inland fishery as "fishing activities in natural or "semi-natural", limonitic ecosystems, such as rivers, lakes, gravel pits, other aquatic organisms therein". Allan et al [8] defined inland fisheries as the capture of wild stocks of primarily freshwater fish, including migratory species that move between freshwater and oceans. Inland fishery is a unit or an entity that is engaged in exploiting and harvesting freshwater fish. Typically, inland fishery is the combination of fish and fishers in a region and the conservation, management, and development of fish and water resources [8]. The term, 'artisanal' in fisheries context is derived from the term "artisan" and according to [9], it refers to "a person who does skilled work, making things with the hand". Subsistence fishers catch fish for bringing food to the table and also for trade. An extensive definition of 'artisanal fishing' is provided by [10]. Artisanal fishing is a dynamic activity that ranges from sedentary to migrant fishers or communities, from part time to full-time fishing activity, from subsistence to non-differentiated or highly differentiated and specialized fishing' [10]. According to Mathew[2], 'artisanal fishing', particularly applies to coastal or island and inland ethnic groups using traditional techniques such as rod and tackle, arrows and harpoons, throw nets, drag nets, and traditional boats. Artisanal fishing is often, but not always, less intensive and less stressful on fish populations than modern industrial fishing techniques [2].

2.2 Artisanal fishing value-chains

Fishing is an important economic activity in the lives of many people. Various categories of people are engaged in the organisation of fishing activities for their livelihoods. These activities bring to the fore the concept of value-chain which emerged in the 1960s as an analytical tool for agricultural research [11]. The growth in theory and application of value-chains suggests that they are useful in understanding benefit flows from production

systems such as fisheries. Porter [12] introduced in his book 'The Competitive Advantage' the concept of value-Chain. He suggested that activities within an organization should add value to the service and products that the organization produces, and all these activities should run at an optimum level if the organization is to gain any real competitive advantage. Primary product-based (e.g. fish) value-chain analysis is often used to track changes in the price and cost that are incurred as the product passes between actors (fishermen, processors, and traders) with production systems, from the initial inflow of products through to the final consumer [13]. However, the view that activities within the organizational structure should add value to the service and product and that, the organizational activities should run at an optimum level, does not apply in all cases. This is because every activity has its challenges resulting in a vulnerability context. According to Adger et al. [14], in the case of fisheries, people may be exposed to physical risks (waves and high winds, accidents while hauling nets), climate-induced risks (impacts of global warming on fish productivities), health risks, currency devaluations, and increased fuel prices and political and security risks (theft and conflicts) are eminent factors hindering fishery activities. This study, however, seeks to show the livelihood situations of artisanal fishing including fishermen, fish processors, and traders, and relationships that exist between them in the Kwahu North District. Fishers (particularly men) may perceive such activities as 'women' business, as women are generally responsible for the selling of processed fish [15]. The role of consumers is, however, not included in this study. Further, in mapping fishing value-chain networks, it may be possible to identify inefficiencies that run through the fishermen, fish processors, and traders and the inequalities that emerge between these stakeholders as a result of trade relations. Value-chain analyses might also present an opportunity to enhance the resource management strategies and the type of fishing methods to use to enhance sustainability. It would also present a clearer estimate of the overall economic contribution to the main actors [16]. Also, traditionally, each fishing community in Ghana has a chief fisherman who governs the fishermen. He is assisted by a council of elders. The roles of the chief fisherman include; coordination of rescue operations in the event of accidents at sea, participation in religious rituals connected to the sea, and settlement of disputes [17]. Furthermore, he is involved in mediation with migrant fishers and represents their communities of the Ghana National Association of Canoe Fishermen (GNACF). There is ahead of the women mongers and processors. She also has a council of elders. She is involved in the settlement of disputes in the fish trade, represents women in negotiations to set daily prices of fish, and oversees occasional cleaning of landing sites. The two councils co-exist and generally work together for the mutual benefit of their members. In communities where women processors have received external support in terms of credit, technology, and functional education, they often contribute to community development activities [18]. Nevertheless, with the importance of artisanal fishing in the lives of the fishers, the study seeks to investigate the work and livelihood activities of the fishers in the Kwahu North District.

2.3 Rural livelihood concepts and artisanal fishing

The definition of a livelihood as a means of securing a living summarises a reality that comes into focus as being complex as its parts are found and named, and its structure unraveled. Livelihood is a process that underpins the way people derive their incomes. According to Ellis [19], livelihood comprises 'the activities, the assets, and the access that jointly determine the living gained by individuals or household'. The livelihood concept is a realistic recognition of the range of activities that individuals and households engage in to ensure their survival and improve their wellbeing. The concept of a livelihood can be defined at several levels of hierarchy. The home is the most generally used level to describe a human group that cooks together at the same hearth. It is necessary to recognise an individual or intra-household level when adopting this level, in which the wellbeing and access of some household members, particularly women, and children, maybe inferior to that of others, especially men; and also the broader levels of the extended family, the social group, and the community [20]. About artisanal fishing and rural livelihood, various strategies are adopted by rural households in artisanal fishing to support their livelihood. These strategies range from a low human (labour) investment combined with low capital investment to a high level of labour and/or capital-based activity. Between these two extremes, a continuum of combinations exists which provide opportunities to thousands of people to include fishing activity as part of the overall range of activities they undertake to sustain their livelihoods in rural areas.

2.4 The nexus between artisanal fishing as a rural livelihood activity and well being

Various strategies are adopted by rural households in artisanal fishing to support their livelihoods. These strategies range from low human (labour) involvement, to a highly intensive labour activity and from low capital investment to highly capital based activity. Between these two extremes, a continuum of combination exist which provide opportunities to thousands of people to include fishing activity as part of the overall range of activities they undertake to sustain their livelihoods. The combination of low human involvement and low capital investment corresponds to the strategy of opportunistic fishing, especially for subsistence purposes. This involves cheap and simple fishing gear (baited fishing lines) and it is frequently carried out by 'non leading' members of the household (children or elders, or sometimes adult women) in addition to other domestic activities. In West African villages on the coast or in the vicinity of rivers, opportunistic fishing, with other activities such as farming, household or agricultural commitments occupying the rest of the day is very common [21] [22]. Further, seasonal (or part-time) fishing is usually characterized by a slightly higher labour and financial involvement. It is also operated by different members of the household, part-time fishers and young or mature males who get involved in fishing activities as part of a wider, multi-activity livelihood portfolio. These artisanal fishers use relatively cheap and simple gears (e.g. traps, gillnets, hook and lines) although some use sophisticated gear or techniques [23].

The third categories of fishermen are full-time fishers as a result of absence of other opportunities. They are wage based fishermen working all year round on artisanal vessels

(Ahmad et al. 1998). Nevertheless, the categories of fishers and the degree of human and financial investment does not necessarily 'explain' by itself the level of success or failure of the household and the extent to which involvement in fishing activities contribute to household well-being. According to the Volta Lake Frame Survey completed in 1999 by the Directorate of Fishers (DoF), there were over 1,200 villages along the lake, over 24,000 planked canoes and The Lake Volta Fishery employs nearly 70,000 people. It is also reported that 20,000 fish processors and traders also depend on the lake for their livelihood. The gears used are cast and gill nets, hook and line and traps. The species exploited are mainly Cichlids (38.1%), Chrysichthyes spp (34.4%) and Synodontis (11.4%) [24]. In summary, the contributions of fishing activities to the livelihoods of rural poor and non-poor households may take remarkably diverse forms and may involve a variety of different strategies.

2.5 Conceptual framework

This study adopts the Sustainable Livelihood Approach (SLA) as its conceptual framework. This is because of the failure of other approaches like the Economic Valuation Technique (EVT) to identify factors that influence or affect people's access to these resources. According to Sen's [25] conclusion, which was initially framed in the context of famine [25] (Sen, 1981), the wider domain of empirical studies has demonstrated that poor people in rural areas are usually those who lack access to natural resources like fishing. Further, Fisheries Enhancement Programmes (FEP) initiated in the 1990s in Bangladesh, though successful, failed because the poorest who could not invest in adequate fishing gears and fishing licenses were excluded or only benefited from a very limited portion of the increased fish production [26]. However, the Sustainable Livelihood Approach (SLA) offers a useful framework to answer different questions. It provides a methodology that looks at the positive and negative impacts of a particular form of fishing development upon the livelihood of the poor [27]. The sustainable Livelihood Approach is a way to improve the understanding of the livelihoods of poor people. It draws on the main factors that affect poor people's livelihoods and the relationship between these factors. It can be used in planning new development activities and in assessing the contribution that existing activities have made to sustainable livelihoods.

SLA is a holistic and people-centered approach that attempts to capture and provide a means of understanding people's livelihoods and in particular, the factors and processes which affect these livelihoods [28]. The framework as presented consists of five components;

- i. The vulnerability context of the environment in which the communities under consideration operate;
- ii. The livelihood assets of these communities;
- iii. The policies, institutions, and processes which affect their access to livelihood assets;
- iv. The livelihood strategies which the communities adopt and

v. The outcomes they achieve or which they aspire.

The SLA's usage in understanding the role of institutions is an important feature (e.g. rules and norms) which appear to be so important in shaping the mechanisms which affect people's access to the resources. The UK Department for International Development (DFID), United Nations Development Programme (UNDP), Oxfam, and CARE, adopting their related understandings of SL and employing SL approaches to facilitate and help rural development in practice [29] [30]. When comparing the livelihoods work of various agencies, the approaches used appear to have a lot in similarity, even if there are some operational differences. Among these approaches, the pentagram-based module (Figure 2.) developed by [30] is most prominent, and this framework is believed by some to have captured well, the essential concept of 'livelihood' [31].

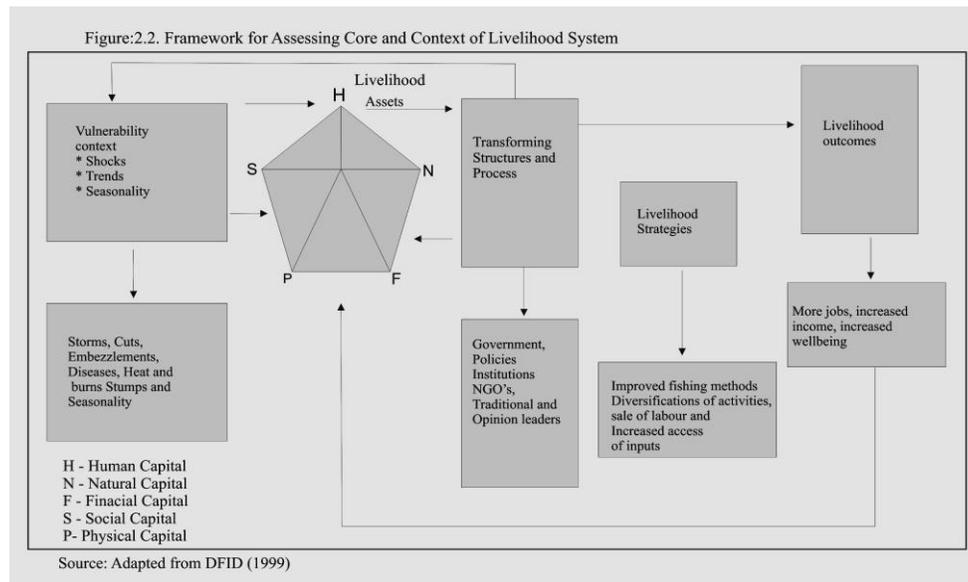


Figure 1: The dfid sustainable livelihoods framework (source: dfid, 1999: 11).

3 RESEARCH APPROACHES AND METHODS

3.1 Types and sources of data

Data for the study was obtained from both primary and secondary sources. The primary data was obtained first hand from the field principally from a sampled group of fishermen whilst the secondary data was obtained through review of relevant documents such as books, journals, district assembly profiles and internet sources on issues relating to artisanal fishing activities. The data consisted of both qualitative and quantitative types and were used to investigate the work and livelihood activities of the key people involved in the artisanal fishing and how their positions along the fish production value-chain affect their wellbeing.

3.2 Sampling and Sample Size

Due to the scattered nature of the settlements, it was considered more feasible to locate a cluster of communities for closer analysis. For instance, the 2000 Population and Housing Census shows that, the population in the Kwahu-North District is scattered in 544 towns, villages, and hamlets spread over a total land area of 5040 sq km. About this, four communities were selected for the study, namely Ekye-Amanfrom, Brumben, Amankwa-Krom, and New-Kyease. The total population of the four communities where the sample was drawn was 8, 784. The sampling techniques used included stratified sampling and purposive sampling. The stratified method was used to select respondents from each community. A total sample of 200 was drawn out of 8, 784 with 50 respondents selected from each community. These included 25 fishermen, 15 fish processors, and 10 fishmongers or traders. These ratios generally reflect the proportions in which the fisher groups occur in the study area. The researchers selected the same number of respondents from the study communities due to the cosmopolitan nature of some of the communities, though the communities have differences in their population size. Purposive sampling was used to select 4 opinion leaders who were head of fishermen, 4 traditional authorities, and 4 Assembly Members for further understanding of artisanal fishing and livelihoods activities in the study area. In each of the communities, one opinion leader, the traditional authority, and assembly member were selected.

3.3 Data collection methods

The main data collection instrument used was a formal interview using a structured questionnaire. This is the method in which a set of questions was administered to respondents where the researcher fills in the responses. Respondents with formal education also filled in their responses where necessary. This was supplemented by in-depth interviews where the interviewer questions the respondents for detailed information. This method ensured consistency and validity of the responses given the low literacy levels in the study area. The information that was sought from each of the groups, related to their various areas of operation as fishing, fish processing, and fish mongering. These included specific activities and methods of operation like the type or types of gear used, main fishing hours and hours spent during the fishing time, number of people in each canoe, time for preparing the nets, distance mostly covered from shore, sources of income, health status; living conditions, problems encountered and ways of improving the fishing industry. Among the processors, the information sought includes; specific activities, processing materials, methods used in processing, labour used in processing, and ways of marketing processed fish. The information sought from the mongers included marketing activities, modes of financing fishermen and fish processors, types of labour, hazards, and constraints facing the mongers. The formal interviews were supplemented by Focused Group Discussion and observation.

3.4 Data Analysis and Presentation

In this study, both qualitative and quantitative analytical procedures were used. The quantitative data was analysed and presented through descriptive techniques such as frequency distributions, cross-tabulations, pie charts, and bar graphs.

This was done after the field data was edited for consistency of responses, re-coded and fed into the computer, and analysed with the aid of Statistical Package for the Social Sciences (SPSS) Version 16.0. The qualitative data was analysed through examination of main themes, trends, differences, and similarities in the responses and presented through a written account to better explain the proportions that the quantitative analysis provided.

4 RESULTS AND DISCUSSION

4.1 Type of nets used

The various type of nets used includes; nylon gill-nets with meshed size ranging between ½ inch to a bigger inch net of 8 inches. Fishing traps of various kinds were also employed. They include basket traps, bamboo traps or tubes, and traps made from wire mesh. Hooks and lines are also important fishing equipment. Other methods are cast nets, a combination of gillnet and fish traps-“nifa” as well as active gear such as beach seines-“Adranyi” and purse seines. Bamboo tubes and ‘Atidza’ are fast catching up with the fishermen. The study indicated that the fishermen employ a combination of various fishing methods. Fish traps constitute 5.2%. Gillnet and fish trap ‘nifa’ represent 11.3 percent whilst gill net and cast net 6.2 percent. Gill, cast, ‘nifa’, purse seines constitute 13.4 percent with hook and line, fish traps, and ‘Atidza’ 5.2 percent. Others include ‘Atidza’ and gill net 6.2 percent. Gillnet, fish traps, and cast net represent 5.2 percent. 14.4 percent of the methods include gill net, cast nets, and ‘Atidza’ methods of fishing. The study also revealed that 32.9 percent of the fishermen use more than four fishing methods. Braimah pointed out that, the use of the active gear is illegal but does produce 65-70 percent of fish landing in Volta Lake [32]. However, observation showed that all fishing methods could be dangerous depending on the type of nets used. For instance, cast net which is considered to be one of the safest fishing methods can be bad if the mesh size used is small in such a way that immature fishes are caught. Also, except bamboo tubes meant for chrysichthyes (catfish), the other types of fish caught are not solely limited to the various fishing methods.

The various fishing equipment was prepared solely by the fishermen, some of which are attached with corks and lead. The lead sinks the nets whilst the corks float them. The nets are, however, weighed down when it is suspected that the fishes are not moving close to the surface of the water. Fishing activities also take place in shallow areas and bays where set gill nets are stretched between tree stumps in the water and the water floating plants. Most nets like gill nets are set perpendicular to the shore and on the lake bed to catch fish as they feed in shallow waters, especially at night. Fishing is carried out both day and night and the number of fishermen expected per canoe ranges from two to four. The nets are set late in the afternoon and inspected the next morning between the hours of 6.00 am and 9.00 am. This depends on the fishing methods used and the quantity of the nets. Discussions with fishermen show that bumper fishing months start from June to November which corresponds with the rainy months. During this period, the water level of the lake continues to rise, indicating an inflow of water from its tributaries and watershed.

The water becomes turbid since suspended materials from upstream of the various tributaries attract fish nearer to the banks. From December to May, fishing is usually poor as the level of the lake steadily decreases. The water becomes clearer during these months and the fishermen shift their attention mostly to crop farming in the draw- down zone as the water level recedes [33].



Figure 2: fisherman with an outboard motor Source: field observation, January 2012.

4.2 Fish processing methods

Smoking is the commonest method of fish processing (43.9%) followed by frying (22.8%). Salting is a less popular single method of fish processing (5.3%). Processing methods used in the research communities included smoking and frying (14.1%), smoking, salting and drying (10.5%), and smoking and salting (3.5%). Bigger fishes caught by mesh-sized nets of 2½ inches and above are smoked. Traditionally, smoking is done in ovens built with clay. However, in recent years, 'Chorkor' ovens are in use. The most preferred method of smoking was by the rather inefficient round oven, which uses far more fuel wood than the 'Chorkor' oven which was introduced with great success along the coast. The fish processors believed that fish smoked with the round ovens smoked better and the probability of the fish being burnt was less. Freezing is a less popular method of fish processing in the study area. This is a result of the distant nature of the fishing communities from urban centers. Locals prefer fresh fish to frozen ones. A reasonable quantity of salt is applied to the fish, kept for one to five days, and dried for storage. Frying is another method of processing fish for the market. These activities are undertaken by either the wives of the fishermen or the processors who buy directly from the fishers as shown in the figure 4 and 5.

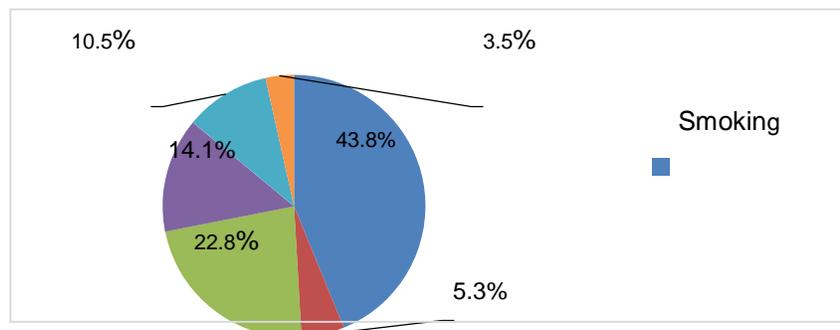


Figure 3: Pie chart showing fish processing methods in the study communities.

Source: field survey, January, 2012.



Figure 4: A woman smoking fish at ekye-aman from.

Source: field observation, January 2012.



Figure 5: Fish processors frying fish at ekye-aman from

Source: field observation, January 2012.

3.3 Types of labour used in fish processing

Hired labour was used in fish processing (29.7%). Family, self and friends were also other sources of labour constituting 27%, 18.9% and 4% respectively. The study among fish processors revealed that more than two options of labour were used in processing. Hired and family labour which accounted for 29.7% and 27% respectively were used because of their reliability. This is because the processing of fish needs to be done on time to avoid deterioration of the fish. The study also revealed that processors do have easy access to other forms of labour as compared to fishermen.

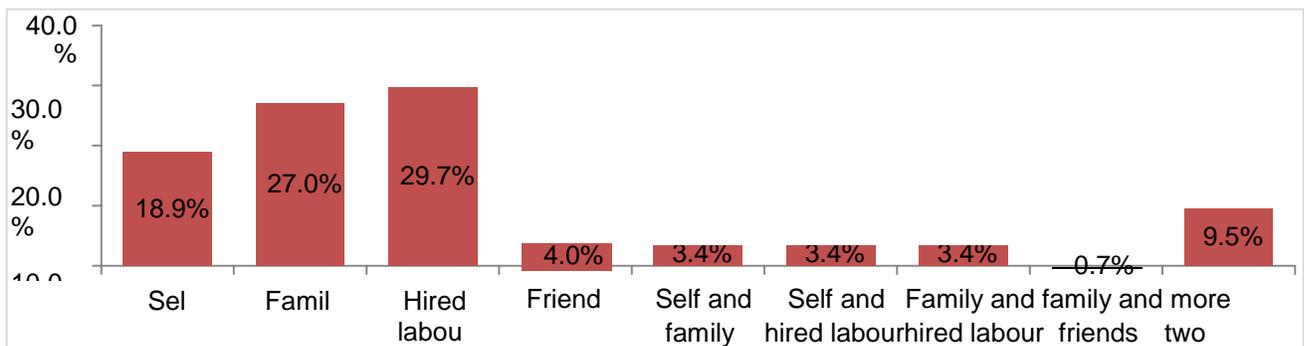


Figure 6: types of labour used in fish processing in the fishing communities

Source: field survey, January, 2012.

3.4 Mode of selling fish produced

Approximately, 76% of the processed products are sold to traders/ mongers for direct cash. Retailing and credit sales from less than 10% each as other modes of sales among fish processors. To play an effective role to link both the traders and fishermen the processors use various modes as direct cash to sell the produce:

- i. Those that are paid promptly with 75.6% as indicated in Figure 7. These categories of processors are pre-financed by the traders who are their loyal customers.
- ii. Those that allow some traders to buy on credit. These traders who are unable to pay for all the products bought are seen as loyal to both fishermen and processors but mostly impose their wish during the bargaining process on them.
- iii. The third groups are processors who retail their products and are not financed by traders and can choose to sell in market centers at prevailing market prices and come directly under the category of the processors who sell their produce in the market centers both within and outside the district. These groups of processors double as traders as well and happened to be wives of well-established fishermen.

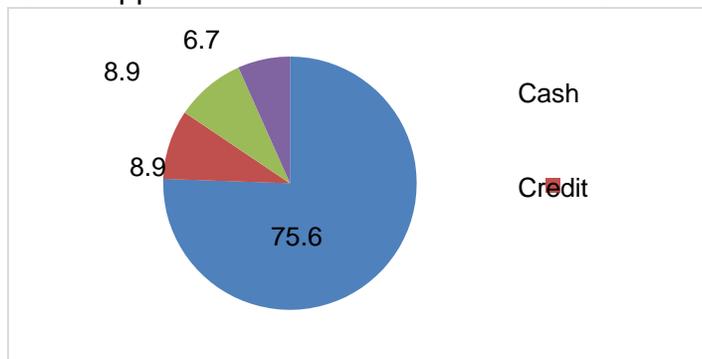


Figure 7: Pie chart showing modes of selling produce.

Source: Field survey, January 2012



Figure 8: Processors retailing their produce at ekye-aman from market.

Source: field observation, January 2012.

3.5 Livelihoods activities of fishmongers

The assets that poor people possess or have access to, the livelihood they desire, and the strategies they adopt are influenced by the context within which they live [34]. The main livelihood activities of fishmongers include; selling and distributing fish products within and outside the district. Slightly above fifty percent (54%) of all the fish handled by fishmongers are sold outside the Kwahu North District. Fish landed by the fishermen are either distributed or marketed fresh or in the processed form at prevailing market prices or through bargaining. Maembe [35] estimated that 10 percent of fish caught in Volta Lake are eaten fresh. The study shows that 46.2 percent of the landed catch is sold in the district whilst 53.8 percent is sold outside the district. The study further revealed that the percentage of the landed fish which is sold within the district are re-sold to other traders who reside within and outside the district but are not living in the fishing communities. The major market centers within the district are found in Donkorkrom, Maame Krobo, Ekye-Amankrom, Bruben, New-Kyease, and other smaller centers where barter system takes place between fishing and farming communities. The major markets are weekly markets. Donkorkrom market takes place on Thursdays, Ekye-Amanfrom, and New-kyease on Tuesdays and Brumben on Wednesdays. The price of fish depends on the type and size. The fish is either counted in hundreds, measured with baskets and pans, or sold in singles. Usually, the smaller types of fish are measured or counted. This is shown in figure 9 below.



Figure 9: Traders buying from processors at ekye-amanfrom market.

Source: field observation, January 2012.

CONCLUSION

This research concludes that fishing activity is important in the lives of the major players in the district. It plays a major role in the global ecosystem, economy, and human diets. It provides employment where millions of people fish full time for their livelihood. Governmental and institutional support and attitudinal change of the fishers will help improve the living conditions of the fishers.

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