

CHALLENGES OF ARTISANAL FISHING AND LIVELIHOOD 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. The main economic activity, fishing, is undertaken on a small scale basis, leading to low returns and inability to break out of the poverty trap. The major players in the artisanal fishing industry, namely, fishermen, processors and mongers experience a wide range of challenges which make it difficult for them to make ends meet and provide for themselves and their dependants. The research examines resilience and vulnerability of artisanal fishing and livelihoods along the Volta Lake in the Kwahu North District. 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. Both qualitative and quantitative analytical procedures were used. Various hazards and constraints were investigated. 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: Livelihoods, Flows of people or goods, Resilience, Security, Sectional interactions, 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 (FAO, 2009), 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 (FAO, 2009). Artisanal fisheries have long been a very important economic sector in West Africa. Small-scale fisheries are typically of traditional, artisanal and/or subsistence character. According to Mathew (2001), fishing activities have been passed on from generation to generation and fishing is carried out for livelihood and food security purposes (Mathew 2001 cited in International Journal of Development and Sustainability, 2012). 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 (Jallow, 2009).

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 (Jallow, 2009). The importance of fish in the Ghanaian diet cannot be overemphasized as it provides the Ghanaian consumer with 60% of animal protein needs. According to the 2007 Budget Statement of Ghana, the country's total annual fish requirement was estimated at 720,000 metric tonnes, while annual production averages 400,000 metric tonnes. This leaves an annual deficit of 320, 000 metric tonnes which is made up through importation of US \$ 200 million worth of fish yearly (MoFEP, 2007).

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, semi-industrial and industrial sectors, 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 fish stock gets depleted and catches dwindle all operators at all levels of the fish value-chain are affected (Seini et al, 2002). Following from 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 earn income that improve upon their access to food (Seini et al, 2002).

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 production, benefits and constraints is the subject matter of this research.

1.1 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 (Jallow, 2009). 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 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 boats. 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 in order 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 over fishing, 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 need to be closely examined as this information is largely unavailable on the situation in the Kwahu-North District. Finally, 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 fishers spend on net repairs and how that affects their net earnings. It is against this background that, the study sets out to investigate challenges facing artisanal fishing and livelihoods in the Kwahu North district.

1.2 Research objectives

The general objective of the research is to investigate artisanal fishing on rural livelihoods in Kwahu North District.

Specifically, the study seeks to:

1. Find out the challenges facing the fishermen and other actors in the artisanal fishing industry in the study area.

2 LITERATURE REVIEW

2.1 Fishing

According to FAO (2000), 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 but fish, this definition is useful because it focused on open access fisheries where restriction cannot be exercised. However, Arlinhaus et al (2002) 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 (2005) 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 of 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 (Allan et al, 2005).

2.2 Rural livelihoods concepts and artisanal fishing

The definition of a livelihood as a means of securing a living summarises a reality which 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 (1999), 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 survivals and improve their well being. The definition of a livelihood can be at different hierarchical levels. The most commonly used descriptively is the household, usually the human group which shares the same hearth for cooking. In adopting this level here, it is important to recognise an individual or intra-household level, in which the wellbeing and access of some household members, and especially women and children, may be inferior to that of others, especially men; and also the broader levels of the extended family, the social group, and the community (Swift, 1989).

2.3 Rural livelihoods

Rural livelihoods depend more on natural assets and is much less likely in urban areas where people are more dependent on cash income and do not draw directly on natural capital. The urban economic activities such as manufacturing, transport and construction are beyond the control of individuals or households. Rural-Urban livelihoods, however, should not be dealt with in isolation because the actors notably politicians, enterprises, households, individuals operate in both urban and rural areas. Tacoli (1998) suggests that there are two types of rural-urban linkages.

- a. Flows of people or goods.
- b. Sectional interactions.

Flows of people are complex; they are multidirectional and differing duration and of variable composition. On the other hand, sectional interactions refer to 'rural' sectors in urban areas. Urban and rural areas usually enjoy mutually beneficial links and promote economic growth. Cities benefit when agricultural productivity increases. Growing rural economies provide market for urban services and manufactured goods. Rural areas also benefit from the growth of cities which provide markets for agricultural products and for rural non-farm outputs, and from increased productivity resulting from technology transfers, services, education and training (Tacoli, 1998).

Nevertheless, rural-urban links may also have negative consequences. Increased agricultural production to satisfy urban demand may deplete environmental capital. Urban expansion may compete for rural resource such as land and water, and is likely to generate increased waste and pollution. In rural areas, access to land, capital and labour determines the extent to which fishers can benefit from urban markets (Tacoli, 1998).

2.4 Resilience and vulnerability of fishing dependent livelihoods

The assets which 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 (Ellis, 1999). This is conceptualized as having two broad dimensions; factors that influence their vulnerability, and policies, institutions and processes. Vulnerability refers to the insecurity of the well-being of individuals, households or communities in the face of changing environment. Environmental changes threatening welfare can be ecological, economic, social and political. These changes often come with increased risk and uncertainty and declined self respect (Moser, 1998). The concept of vulnerability better captures processes of change than more static measures of poverty (Moser, 1996, p2; 1998). Nevertheless as a result of low level of research on the vulnerability of fishers in the area, the study seeks to fill the gap by investigating vulnerable situations of the fishers in terms of hazards and constraints they face

in undertaking their activities. This would help bring to the fore policy interventions needed by the fishers to improve their livelihood conditions.

Further, analyzing vulnerability also identifies not only the threats to individuals and households and their assets but their resilience. Resilience is the ability to mobilise assets to exploit opportunities and resist or recover from the negative effects of the changing environment (Moser, 1998). The ability of households to avoid or reduce vulnerability and to increase economic productivity depends on their ability to transform those assets into income, food and other basic necessities by intensifying existing and developing new or diversifying their strategies (Moser, 1996; 1998, Conney, 1998).

Many rural and urban residents rely on a combination of both rural and urban based assets or income sources and access which is often essential for the survival strategies of poorer households as well as for accumulation of strategies of better-off groups (Moser, 1998). For example, urban demand (and markets) can be critical for rural producers, while at the same time many urban enterprises rely on rural consumers. Small and intermediate urban centers are often linked to the surrounding rural settlements by complex two-way interactions which include trade or employment and the provision of services such as hospitals and secondary education (Kamete, 1998). It is widely acknowledged that access to non-agricultural employment is increasingly important for rural populations and that in many cases diversification of income sources is an effective survival strategy for vulnerable groups with limited access to assets (Ellis, 1998). However, with little research work on diversification of economic activities of fishers in Afram-Plains District, the study seeks to exploit fully, fishing activities available in the fishing communities for their full exploitation to improve the livelihood condition of the fishers.

For the rural populations, migration is an important way to ensure access to assets which are temporal or permanent. These two linkages may include sending remittances from urban to rural areas. In addition investing in property such as housing, land and cattle in the home area is often an important element of migrant-livelihood strategy, and relatives are those most likely to take care of those assets in the migrants absence (Kriiger,1998; Smit,1998). Strong rural-urban links at household level mean that, increased poverty in rural areas often impacts negatively on urban areas and vice versa. It is assumed that falling fish prices or lean harvest of fishery resources or declining rural production mean a sharp rise only in rural poverty, but these also mean a falling demand for the goods and services provided by many urban enterprises to rural enterprises or households. An increase in urban poverty also implies that, there are fewer job opportunities in urban areas for rural dwellers; reduced remittance flows from urban to rural areas, less urban demand for rural products and possibly more urban to rural migration, which could increase dependency burdens in rural areas (Moser, 1996).

To conclude, Khalid (2001) observed that the formation and implementation of policies are different issues in both theoretical and practical terms. Implementation is more complicated, being concerned with political, financial, administrative and socio-economic issues, and requires motivation, proper lobbying, technical, professional and administrative support to succeed.

2.5 Conceptual framework

This study adopts Sustainable Livelihood Approach (SLA) as its conceptual framework. This is because of the failure of other approaches like Economic Valuation Technique (EVT) to identify factors which influence or affect people's access to these resources. According to Sen's (1981) conclusion, which was initially framed in the context of famine (Sen, 1981), the wider domain of empirical studies have clearly demonstrated that poor people in rural areas are usually those who lack access to the natural resources like fishing. Further, Fisheries Enhancement Programmes (FEP) initiated in the 1990's in Bangladesh, though successful, failed because the poorest who could not invest in adequate fishing gears and fishing licenses were totally excluded or only benefited from a very limited portion of the increased fish production (Capistrano, Ahmed and Hossain, 1994).

However, Sustainable Livelihood Approach (SLA) offers a useful framework to answer different questions. One advantage of livelihood analysis is that, it provides a methodology that looks at positive and negative impacts of a particular form of fishing development upon the livelihood of the poor (Jamieson et al. 2004). Sustainable Livelihood Approach is a way to improve 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-centred 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 (DFID, 2000). The framework consists of five components;

1. The vulnerability context of the environment in which the communities under consideration operate;
2. The livelihood assets of these communities;
3. The policies, institutions and processes which affect their access to livelihood assets;
4. The livelihood strategies which the communities adopt and
5. The outcomes they achieve or which they aspire.

An important aspect of the SLA is its use in helping to understand the role of institutions (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 own related understandings of SL and employing SL approaches to facilitate and help rural development in practice (Carney et al., 1999; DFID, 1999). Comparing various agencies' livelihoods work, the approaches employed appear to have much in common although there may be some different operational emphases. Among these approaches, the pentagram-based module (Figure 2.1) developed by DFID (1999) is most prominent, and this framework is believed by some to have captured well, the essential concept of 'livelihood' (Baumgartner & Högger, 2004).

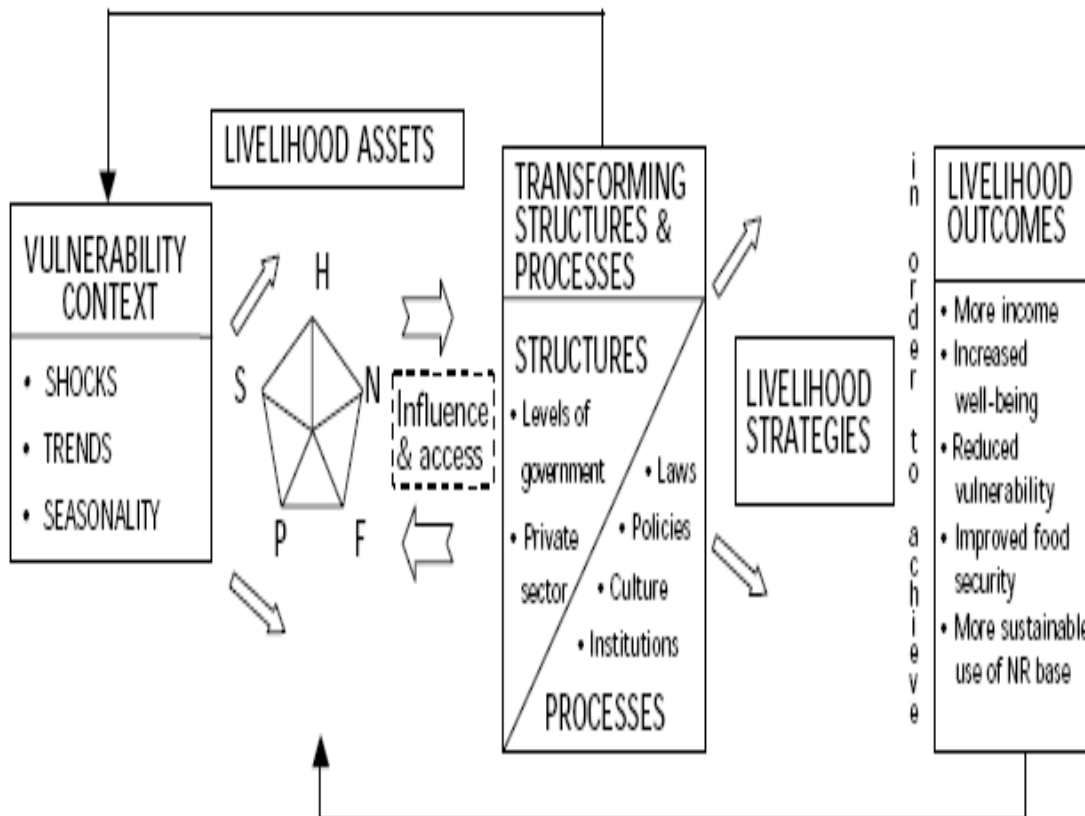


Figure 1. the dfid sustainable livelihoods framework (source:dfid,1999: 11).

The DFID based framework (fig. 1) reinforces a people-centred approach, based around five features;

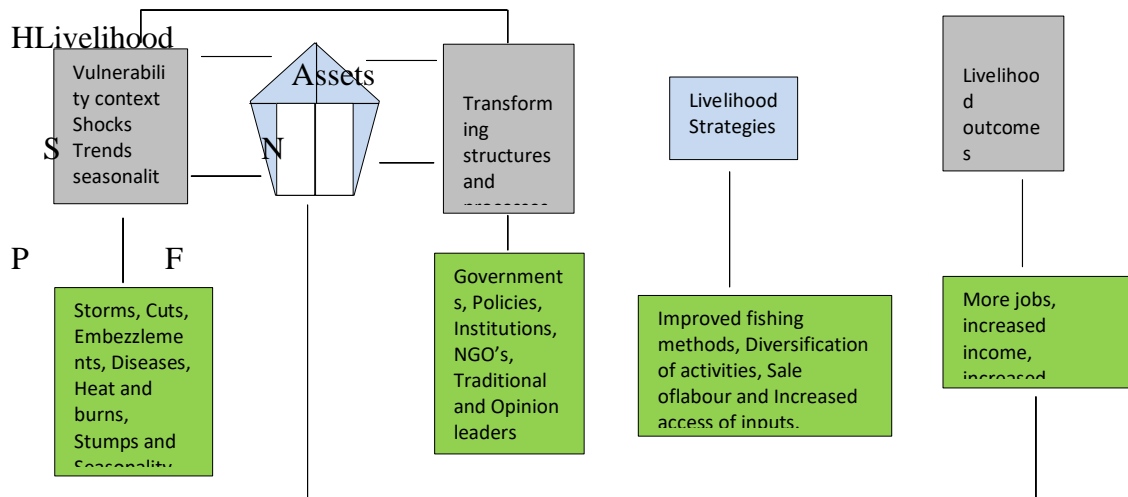
key features:

- i. (Asset): Livelihood assets consist of Natural, Physical, Human, and Financial forms of capital (DFID, 1999). Assets are fundamental to the poor.
- ii. Transforming structures and processes: In the framework, structures are hardware which involves public and private sectors. Process is made up of policy, laws, culture and institutions, and is more like software (DFID,1999). Transforming structures and processes play important roles in shaping livelihood assets and outcomes in SL system.
- iii. Vulnerability context: Vulnerability is a key concept related to livelihood sustainability. It includes shocks, trends and seasonality (DFID, 1999). It can adversely affect the poor's assets and choice of livelihoods although not all vulnerabilities are negatives.
- iv. Outcomes: Livelihood outcomes are successes and objectives that livelihood strategies achieve. Outcomes are always the pathway to assessing livelihood sustainability, and the scale of analysis of paramount importance (Scoones, 1998).
- v. Strategies: Livelihood strategies are the activities employed to generate the means of household survival.

According to Ashley and Carney (1999), Livelihood, approaches should be people centred, responsive and participatory, multi-level, conducted in partnership and be sustainable (Ashley

and Carney, 1999). The SL framework therefore places people at the centre of a web of inter-related influences that affect how these people create a livelihood for themselves and their households. Closest to the people at the centre of the framework are resources and livelihood assets that they have access to and use. These can include natural resources, technologies, their skills, knowledge and capacity, their health, access to education, sources of credit, or their networks of social support.

In applying livelihood approaches to fishing industry, fishers are seen as the main actors who use human capital, social capital, financial capital, natural capital, physical capital and political situations to explore opportunities. The Sustainable Livelihood Approach (SLA) which embraces the different dimensions of conditions in fishing communities, such as low levels of educations, inadequate public services, low living conditions, lack of assets and skills, including vulnerability, social networks, institutions which are management systems and more importantly interactions that exist between the fisher groups.



H = Human capital N = Natural capital F = Financial capital S = Social capital
P = Physical capital

Figure: 2. Framework for Assessing Core and Context of Livelihood System

Source: Adapted from DFID (1999).

The natural resource is the lake and the rivers which are exploited by the fishermen from which they derive their Livelihood. The fishers can exploit the natural resource by using their social capital which involves networks, membership of groups, trust and access to wider institutions upon which they derive their income. The social resource depends on the network among the fishermen, fish processors and fishmongers. Further, human capital is needed to fully exploit the natural resource. This represents the skills, knowledge and ability to work, physical capability and good health that together enable people to pursue different livelihood strategies and their livelihood objectives. At the household level, human capital is a factor of the amount and quality of labour available; this varies according to household sizes, skill levels, leadership potential, health status and ability to leverage labour of other household members particularly women (DFID, 1999).

Also, the fishers depend on physical capital in the form of basic infrastructure which involves transport, energy and communication to achieve their goals. The fish processors and the fishmongers depend on the transport system to carry out their activities. The fishers also depend on the financial capital in the form of credit, loans, savings and remittances to

undertake their work. The fishers, however, are vulnerable and are at risk to shocks, trends and seasonality. The vulnerability context affects livelihood assets which involves human capital, social capital, natural capital, physical capital and financial capital. Linked to the vulnerability context below in the framework are storms, cuts, embezzlements, diseases, heats and burns, stumps and seasonality.

Further, closely linked to the livelihood assets in the framework are the structures and processes which can be transformed. Below the structures and processes which can enhance effective work and livelihood of the fishers are governments, institutions, NGO'S, traditional and opinion leaders. They need to implement policies to regulate and enhance activities of the fishers. In addition, connected to the structures and processes are livelihood strategies that the fishers adopt. These strategies results in improved fishing methods, diversification of activities, and sale of labour and increased access of inputs. The livelihood strategies which the communities adopt and the outcomes they achieve or which they aspire, results in more jobs, increased income and increased wellbeing of fishers and are closely linked to the livelihood assets in the framework.

In summary, the value of such a frame-work is to encourage analysts to take a broader and systematic view of the factors that affect people's livelihoods. Whether these are shocks and adverse trends, poorly functioning institutions and policies or a lack of assets, and to investigate the relationship between them it does not take a sectorial view, but tries to recognise the contributions made by all the sectors to building up the stocks of assets upon which people draw to sustain their livelihoods. It is important, however, to keep in mind that, this SLA is and remains a conceptual framework and not an assessment technique.

3 RESEARCH METHODOLOGY

3.1 Types and sources of data

The 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, fish processors and fishmongers 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 resilience and vulnerability of fishing livelihoods in Afram- Plains District.

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, 2000 Population and Housing Census shows that, the population in Afram-Plains District is scattered in 544 towns, villages and hamlets spread over a total land area of 5040 sq km. In line with this, four communities were selected for the study, namely Ekye-Amanfrom, Bruben, 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 random sampling and purposive sampling. The stratified method was used to select from each community. A total sample of 200 was drawn 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 merit of stratified method

is that, it enabled different sub-samples of the target population to be obtained, namely fishermen, fish processors and fishmongers. Purposive sampling was used to select 4 opinion leaders, 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, traditional authority and assembly member was selected.

3.3 Data collection methods

The main data collection instrument used was formal interview using a structured questionnaire. This is the method in which a set of structured 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 in view of the low literacy levels in the study area. The information that was sought from each of the groups, related to problems encountered and ways of improving the fishing industry.

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 trends, themes, 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 Challenges of the fishermen and other players in the artisanal fishing industry

The objective of this study seeks to find out the challenges facing the fishermen and other players in the artisanal fishing industry in the study area. The hazards and constraints faced by fishers in the form of storm, snake bite, arm robbery, diseases and financial difficulty, hinder the smooth running of their activities.

The study tried to establish the common diseases that are mostly prevalent in the fishing communities. The study showed that malaria is the commonest disease among the artisans which constitutes 54.5%. According to Kwahu North District Health Service (2009), malaria is the highest reported case constituting 25.5 per cent and is the sixth cause of death in the district. Malaria is more prevalent in the fishing communities because of their closeness to the water sources which serve as breeding grounds for the mosquito larvae. Malaria is closely followed by bilharzia (25.1%). A study carried out by Chambers (1970), showed that, the two major hazards on the Volta Basin were Onchocerciasis (river blindness) and Schistosomiasis (bilharzias). This showed that, while Onchocerciasis is no longer health concern in the Volta Basin unlike malaria, bilharzias is still a major concern in the fishing communities.

The research further pointed out that, the presence of weeds on the lake provided an ideal habitat for the vector (snails). This is common among the fishermen who dive into the river

when performing their activities. The study indicated that though bilharzia was still prevalent, the reported common disease was malaria. Diarrhoea was also reported as a common disease constituting 13.1 per cent. This was as a result of sanitation problems in the communities and, also, sharing the same source of water with animals like cattle.

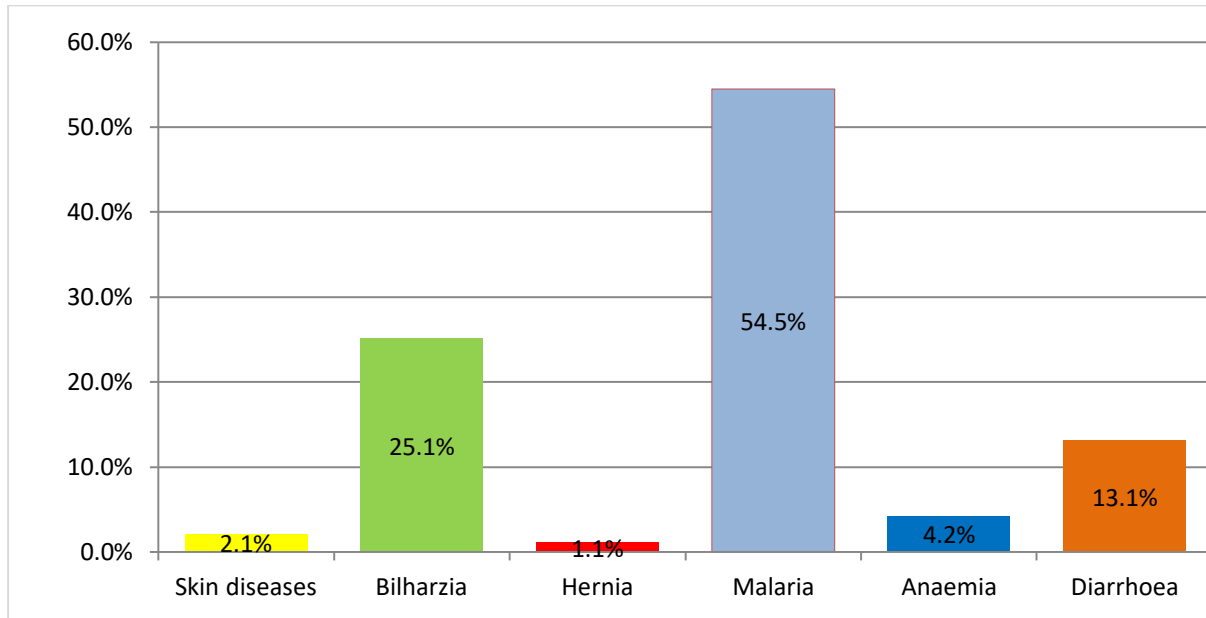


Figure 3: Bar Graph Showing Common Diseases in the Communities

Source: Field survey by Author, May 2011.

4.2 Ability to finance healthcare

Generally, ability to finance health needs in the fishing communities was encouraging. Among the 194 respondents, 79.9 percent can finance their health needs as against 20.1 percent who found it difficult to finance it. Among respondents who were not able to finance their health needs in the communities, fish mongers form the least with 3.6 per cent and fishermen the highest with 9.8 per cent. Also, ability to finance health need was high among fishermen with 30.7 per cent as against 16.5 per cent for fish mongers. This shows that, the fishermen who were the most vulnerable group in terms of hazards were able to finance their health needs. The issue of health in relation to fishing as indicated by Allison et al (2006), that fisher folks are not necessarily the poorest of the poor in monetary terms, but among the most vulnerable socio-economic groups in societies due to their high exposure to certain natural, health-related or economic shocks and disasters. Field data further confirmed that, households who engaged in fishing activities use fish income to cover their health expenses (Russell et al. 2007).

Table 1: Ability to Finance Healthcare.

Index	Fisherfolks							
	Fishermen		Fish Processors		Fishmongers		Total	
	frequency	%	frequency	%	frequency	%	frequency	%
No	19	9.8	13	6.7	07	3.6	39	20.1
Yes	79	30.7	44	22.7	32	16.5	155	79.9
Total	98	40.5	57	29.4	39	20.3	194	100

Source: Field survey by Author, May 2011.

4.3 Means of healthcare financing

As shown in table 2, among the 194 respondents, 49.5 percent were able to finance their health needs through NHIS and 45.4 percent through income from artisanal activity. The use of NHIS, is high among fishermen constituting 21.1 percent and the fishmongers the least with 10.3 percent. The fish mongers felt that, they are the better-off fisher group in the fishing communities and can easily pay for their health needs even in emergency situations. Further, direct income from fisher groups in financing their health needs was high among fishermen representing 29.4 percent and least among fish processors constituting 6.2 percent. This is because; fishermen do have easy access to cash from proceeds of fish than fish processors. The study further revealed that, fish processors who relied on other income sources to finance their healthcare constituted 5.1 percent. This makes the fish processors the most vulnerable group in terms of healthcare financing.

Table 2: Means of Healthcare Financing

Index	Fisherfolks							
	Fishermen		Fish processors		Fishmongers		Total	
	frequency	%	frequency	%	frequency	%	frequency	%
NHIS	41	21.1	35	18.0	20	10.3	9.6	49.5
Income from fishing.	57	29.4	12	6.2	19	9.8	88	45.4
Others	00	0	10	5.1	00	0	10	5.1
Total	98	50.5	57	29.3	39	20.1	194	100

Source: Author's field survey, May 2011.

4.4 Hazards faced by fishermen when undertaking their activities

The hazards the fishermen face outlined in Table 3, makes them vulnerable as they were exposed to these risks when undertaking their activities. According to Moser (1996; 1998), vulnerability is seen as the insecurity of the well-being of individuals, households or

communities in the face of a changing environment. These changes often come with increasing risk and uncertainty.

The study indicated that, among the hazards faced by fishermen in the study communities, storms form the highest with 61 respondents, followed by stumps representing 14 respondents, and snake bites the least with 4 respondents. Further, among the communities, risks faced by the fishermen in terms of storms were high at Amankwakrom and Brumben constituting 32.8 per cent and 29.5 per cent respectively. The high percentage recorded in terms of storms for Amankwakrom and Brumben were as a result of their location along the Volta Lake where wind storms were stronger than Ekye-Amanfrom and New Kyease which are located along River Afram and River Obusum the two tributaries of Lake Volta in the study area. Further, while diseases constitutes 22.2 per cent each at Ekye-Amanfrom, Brubem and Amankwakrom, it represent 33.4 per cent at New-Kyease. The hazards were found to negatively impact on the profit of the fishermen through destruction of nets, low level of output, inability to undertake fishing activities on stormy days, loss of artisanal inputs and reduced profit.

Table 3: Hazards Faced by Fishermen

Hazards faced by fishermen		Ekye-Amanfrom	Brumben	Amankwakrom	New-Kyease	Total
Storms	Frequency	14	18	20	09	61
	%	23.0	29.5	32.8	14.7	100
Diseases e.g Malaria, Bilharzia	Frequency	2	2	2	3	09
	%	22.2	22.2	22.2	33.4	100
Cuts	Frequency	1	1	1	2	5
	%	20	20	20	40	100
Stumps in river torn net	Frequency	4	3	3	4	14
	%	28.6	21.4	21.4	28.6	100
Snake bites	Frequency	2	-	-	2	4
	%	50	-	-	50	100
'Atidza' stick can hurt	Frequency	2	01	01	1	05
	%	40	20	20	20	100
Total	Frequency	26	24	26	22	98

Source: Field survey by author, May 2011.

4.5 Constraints facing fishermen

The highest constraint to fishermen was "financial difficulty" (39.2%), followed by "difficulty in acquiring hired labour" (21.7%). This is because only 17 per cent of the fishermen acquire their inputs through self financing. 36 per cent of fishermen and 5 per cent of other sources such as financial institutions, credit unions, friends and relatives go to confirm the financial difficulties that the fishermen go through in obtaining their fishing input. The difficulty in acquiring hired labour, which accounts for 21.7% actually form the basis of using family labour which were mostly school pupils, resulting in lateness to school, school dropout and absenteeism.

The constraint faced by the fishermen has negative impacts such as low initial investment, no profit and lack of re-investment. Others include 'fish death' due to chemicals, quarrels and police cases, extra cost incurred and reduced fish catch per head. The effects are indicative of the fact that, apart from self financing of fishing inputs, which forms approximately 17 per

cent, the fishermen rely on financial institutions, credit unions, family members and friends. Credit and outright purchase financed mainly by fishmongers for their fishing inputs led to the fishmongers controlling the prices of the fish during the bargaining process with the fishermen.

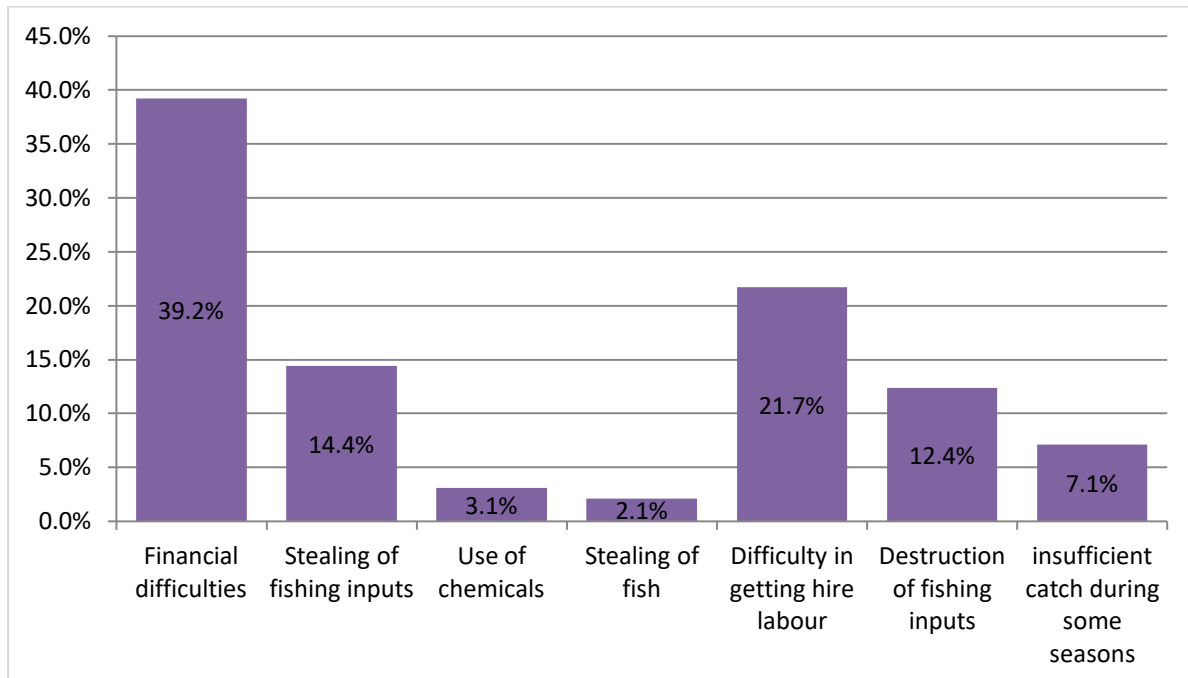


Figure 4: Bar Graph Showing Constraints Facing Fishermen

4.6 Hazards faced by fish processors when undertaking their activities.

The hazards the fish processors face outlined in Table 4, makes them vulnerable as they were exposed to these risks when undertaking their activities. According to Ellis (1999), the assets which poor people possess or have access to, the livelihood they desire and the strategies they adopt are influenced by the context which they live. This is conceptualized as having two broad dimensions; factors that influence their vulnerability, and policies, institutions and processes.

The study indicated that, among the hazards faced by fish processors in the study communities, heat and burn ranked high with 36 respondents and snake bites the least with 6 respondents. Heat and burn in the study communities do not revealed much variations as Brumben and Amankwakrom represent 27.8 per cent each and Ekye Amanfrom and New Kyease constitutes 22.2 per cent. Cuts were also evenly distributed in all the communities constituting 25 per cent each. The study further showed that, while snake bites constitute 16.7 per cent at Ekye-Amanfrom and Amankwarom, it represents 33.3 per cent at Brumben and New-Kyease. Diseases also represent 28.6 per cent each at Ekye-Amanfrom, Amankwakrom and New-Kyease and form 14.2 per cent at Bruben. The hazards faced by the fish processors hinder the full realization of their economic activity, depriving them of income which affect their well being.

Table 4: Hazards Faced by Fish Processors

Hazards faced by fish process		Ekye-Amanfrom	Brumben	Amankwakrom	New-Kyease	Total
Heat and Burn	Frequency	8	10	10	8	36
	%	22.2	27.9	27.9	22.2	100.
Cuts	Frequency	2	2	2	2	08
	%	25	25	25	25	100.
Snake bites	Frequency	1	2	1	2	06
	%	16.7	33.3	16.7	33.3	100.
Diseases eg Malaria Bilharzia	Frequency	2	1	2	2	07
	%	28.6	14.2	28.6	28.6	100.
Total	Frequency	13	15	15	14	57

Source: Field survey by author, May 2011.

4.7 Constraints facing fish processors

The greatest constraint is lack of capital (59%) followed by scarcity of fire wood and poor roads constituting (12.5%) each. This also goes to the traders and the fishermen. Discussions with processors revealed that, traders are their main financiers. Scarcity of firewood is as a result of depleting the forest vegetation around the lake. Ly (1980) and VRA (1995) indicated that destruction of forest vegetation around the lake led to landslide in many areas on the eastern bank of the lake. Poor road network is a constraint because it hampers effective distribution of processed fish. This goes to confirm the bad roads and lack of effective transport system by the traders. This leads to mismanagement and high cost of transport fares. Discussion with the processors showed that, the price of the fish is determined by the season of the fishing activities. Gordon (1988) pointed out that from December to May fishing is usually poor on the Volta Lake as the water level steadily decreases and becomes clearer. During these months, the fisher folks shift their attention mostly to farming in the draw-down zone as the water level recedes. In addition to this farming activity, the processors also engage in petty trading to enhance their living condition.

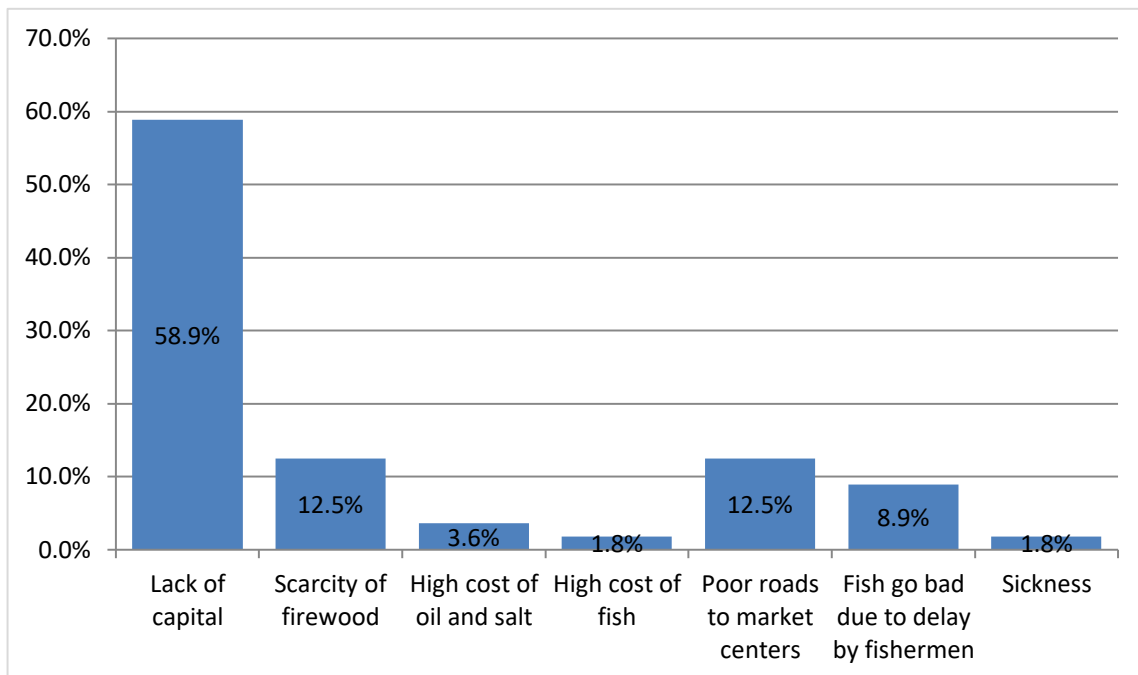


Figure 5: Bar Graph Showing Constraints Facing Fish Processors.

Source: Author's field survey, May 2011

4.8 Hazards faced by fish mongers when undertaking their activities

The hazards the fish mongers face shown in Table 5, makes them vulnerable as they were exposed to these risks when undertaking their activities. According to Moser (1996, 1998), vulnerability is seen as the insecurity of the well being of individuals, households or communities in the face of a changing environment. These changes come with increasing risk and uncertainty. The study revealed that, among the study communities, armed robbery ranked high at Ekye-Amanfrom representing 33.3 per cent with Amankwakrom and New Kyease the least, constituting 20 per cent each. Further, among the study communities, storm was highest at Ekye-Amanfrom representing 42.8 per cent and the least at Amankwakrom and New-Kyease representing 14.3 per cent each. The study also indicated that among the hazards faced by fish mongers in the communities, stumps in the river and heat and burn were not of much concern to them recording 2 and 4 respondents each. Further analysis of hazards faced by fish mongers at Ekye-Amanfrom revealed that, armed robbery constitutes 33.3 per cent and storm 42.8 per cent with heat and burns the least, representing 25 per cent. The study further revealed that, while armed robbery constitutes 26.7 percent of hazards faced by fish mongers at Bruben, storms represent 28.6 per cent. Stumps in the river are not much of a concern to fish mongers at Bruben and Amankwakrom constituting zero (0%) each. This is because; stumps do not directly affect the activities of fish mongers. These risks deprive the fish mongers of income which affect their well being.

Table 5: Hazards Faced by Fish Mongers

Hazards faced by fish process		Ekye- Amanfrom	Brumbe n	Amank wa- krom	New- Kyease	Tota l
Armed robbery	Frequency	5	4	3	3	15
	%	33.3	26.7	20	20	100
Storms	Frequency	3	2	1	1	07
	%	42.8	28.6	14.3	14.3	100
Road accident	Frequency	4	2	2	3	11
	%	36.4	18.2	18.2	27.2	100
Stumps in the river	Frequency	1	-	-	1	02
	%	50			50	100
Heat and burn	Frequency	1	1	1	1	04
	%	25	25	25	25	100
Total	Frequency	12	9	8	10	39

Source: Field survey by author, May 2011.

4.9 Constraints facing fish mongers

Financial difficulty was the highest constraint facing fish mongers constituting 33 per cent in the Kwahu North District. Embezzlement of funds by both fishermen and fish processors was also a major constraint constituting 25 per cent. Bad roads and lack of good means of transportation collectively contributed about 23 per cent of the constraints faced by fish mongers. Reduction in trading activity during lean season and refusal of fish processors to sell to mongers contributed 10 per cent each to the constraints of fish mongers in the district. The mongering activity is structured in such a way that the traders need finance to both the fishermen and fish processors in order to survive in the trade because they buy mostly from those they sponsor. Further, bad roads and lack of effective means of transportation collectively contribute about 23 per cent of the constraint and leads to mismanagement of fishery resources on transit to the market centers within and outside the district. Report of conference on Fisheries Conservation, Saouma (1995) points out that, nearly 10 per cent of the catch in many developing countries does not reach the consumer because of deterioration through lack of immediate cold storage facilities, processing and marketing.

Also, trading activities during lean season and refusal of fish processors to sell to mongers form 10 per cent each of the constraints, which further put the traders in a disadvantaged position. These lead to reduced investment and reduced purchasing of the traders resulting in bankruptcy.

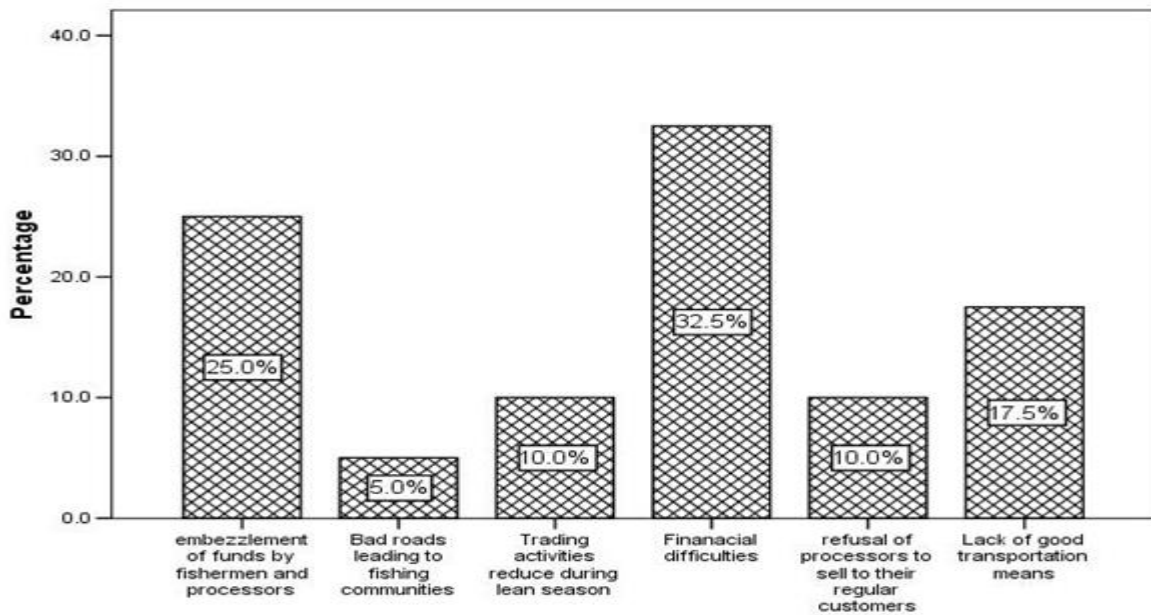


Figure 6: Bar Graph Showing Constraints facing fish mongers.

4.10 Type of assistance needed by fishers

Over 75% of the people request for loans as the kind of assistance they needed. Government assistance was mentioned by the fishers as subsidy and provision of inputs constituting 13.1 per cent and 8.3 per cent respectively. Good means of transport and good market place represents 1.5 per cent and 1.4 per cent respectively. The fishers emphasized that, with the necessary assistance, there would be improvement in their lives. This is because they will be able to diversify their economic activities. The respondents engage in other economic activities to complement fishing, processing and mongering of fish. The activities they undertake involve farming, animal rearing, selling of fishing inputs and other non-farm activities as petty trading.

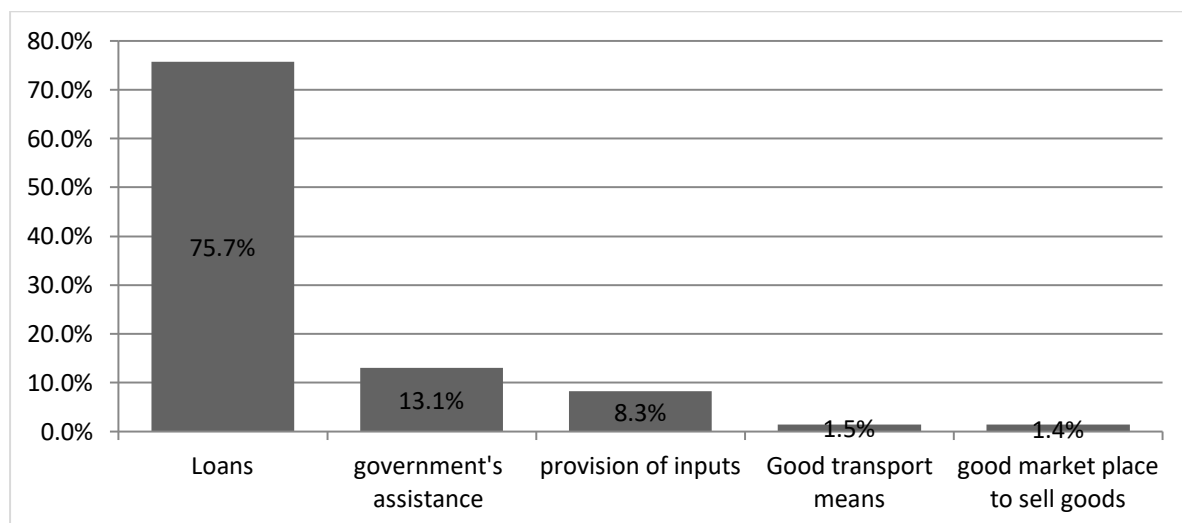


Figure 7: Kind of Assistance Needed by Fishing Artisans. Source: Field survey by Author, May 2011

5 Conclusion

To conclude, the research showed that, fishing activity is important in the lives of the major players in the district. The constraints that faced the industry hinder full realization of the potentials of the fishing industry. Governmental and institutional support and attitudinal change of the fishers will go a long way to help improve the living conditions of the fishers

6 Acknowledgements

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REFERENCES

- Allan, J.D., R. Abell, Z. Hogan, C. Revenga, B.W. Taylor, R.L. Welcomme, and K. Winemiller (2005). Overfishing of inland waters. *BioScience* 55: 1041-1051.
- Allison, E.A., Horemans, B., and Béné, C. (2006), *Vulnerability reduction and Social inclusion: strategies for reducing poverty among small-scale fisherfolk*. Paper prepared for the Wetlands, Water and Livelihoods Workshops. Wetland International. St. Lucia, South Africa January 30-February 2, 2006.
- Arlinghaus, R, T. Menhner, I.G. Cowx. (2002). Reconciling traditional inland fisheries management and sustainability in industrialized countries, with emphasis on Europe. *Fish and Fisheries* 3:316-361.
- Ashley, C. and Carney, D. (1999) *Sustainable Livelihood Lessons from early experience*. London: Department for international Development.
- Baumgartner, R., & Högger, R. 2004). *In search of sustainable livelihood systems: managing resources and change*. New Delhi [India]; Thousand Oaks, Calif.: Sage Publications.
- Capistrano, A.D., Ahmed, M., and Hossain, M. (1994). Ecological, economic and common property issues in Bangladesh's open water and floodplain fisheries. Third Biennial Meeting of the International Society for Ecological Economics, San Jose, Costa Rica, 24-28 October 1991. Press. 1970. P.10.
- Chambers R: Introduction. In *Volta Resettlement Experience*. Ed. Chambers R. Pall Mall Press. 1970. P.10.
- Conney (1998), *A Sustainable Rural Livelihoods: Framework for Analysis*. In Ian Scoones. IDS Working Paper 72, 1998. Institute of Development Studies.
- DFID, 1999. *Sustainable livelihoods guidance sheets*, London: Department for International Development (DFID).
- DFID (2000) *Commissions and funds Livelihoods Connect*, a website serving as a learning platform for SLA.

- Ellis, F. (1999) Rural livelihood diversity in developing countries: evidence and policy implications. Overseas Development Institute Natural Resource Perspectives, No.40: Overseas Development institute.
- FAO Media Centre (2009). The State of world fishing and Aquaculture. <http://www.fao.org/news/story/0/item/10270/icode/en/>.
- FAO, 2000. Poverty in coastal fishing communities. Advisory Committee on Fishery Research Third Session 5-8 December 2000. Rome: Food and Agriculture Organization. <http://www.fao.org/DOCREP/MEETING/003X8905E.html>.
- Gordon, C., (1988) Agriculture in the drawdown of the Volta Lake: present status and prospects. 3rd International Wetlands Conference. Rennes.
- Jallow, A (2009) Fishing for Alternatives.
- Jamieson, W., Goodwin, H., and Edmunds, C. (2004). *Contribution of tourism to poverty alleviation pro-poor tourism and the Challenge of measuring impacts*. Retrieved October 20, 2012.
- Kamete, A.Y., (1998) Interlocking livelihoods: farm and small town in Zimbabwe. *Environment and Urbanisation* 10(1): 23-34.
- Khalid, Hafiz M, 2001. 'Policy implementation models: the case of library and documentation services in Pakistan, 1998-2008'. *New Library World*, Vol.102, no.1162. Pp.87-92.
- Kriiger, F., (1998) Taking advantage of rural assets as a coping strategy for the urban poor. *Environment and Urbanisation* 10 (1): 119-134.
- Ly, C.K. (1980) The role of the Akosombo dam on the Volta river in causing erosion in central and eastern Ghana (West Africa). *Mar. Geol.* 37: 323-332.
- Mathew, S. (2001), "Small-Scale Fisheries Perspectives on an Ecosystem-based Approach to Fisheries Management", Paper presented at the *Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem*, Reykjavik, Iceland.
- Ministry of Finance and Economic Planning-Ghana (2005-2012). 28th February Road, P. O Box M40, Accra-Ghana. Tel: +233302665132.
- Moser, C. (1996) 'Confronting Crisis: A Comparative Study of Household Responses To Poverty And Vulnerability in Four Urban Communities' ESD. Washington.
- Moser, C. (1998) the asset vulnerability framework: reassessing urban poverty reduction strategies, *World Development*, 26 (1), pp. 1- 9.
- Porter, Michael (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: The Free Press.
- Rusell A. J.M., Gordon, A., Bungubetshi, G and N. Zanga.(2007). Preliminary assessment of the artisanal fishery sector around Lack Mai – Ndombe in Lac Tele – Lac Tumba (LTL). *CARPE Landscape*. World Fish Centre, p 25.
- Seini, A. W. Nyanteng, V. K, Ahene, A. A. (2002); 'Policy Dynamics, Trends in Domestic Fish Security in Ghana.
- Sen, A., (1981). *Poverty and Famines: an Essay on Entitlement and Famines* Clarendon Press., Oxford
- Smith, W. (1998). *The rural linkages of urban households in Durban. Environment and Urbanisation* 10(1): 119-134.
- Swift., (1989). 'Why are rural people vulnerable to famine?' *IDS Bulletin* Vol 20.No2.
- Tacoli, C., 1998, 'Rural-Urban Linkages and Sustainable Rural Livelihoods' Carney D. (eds) 'Sustainable Rural Livelihoods' DFID. London.

VRA, (1995) Appendices to the Report of Preparatory commission. Her Majesty Stationary Office, London.